THOMASON
COLLEGE OF CIVIL ENGINEERING
ROORKEE, U. P.

CALENDAR
1939-40



ALLAHABAD:
SUPERINTENDENT, PRINTING AND STATIONERY, UNITED PROVINCES, INDIA

CONTENTS

THOMASON COLLEGE OF CIVIL ENGINEERING.

CALENDAR, 1939–40 SESSION.

General and Office.

OCTOBER, 1939.

Dates	Days of week	General and Office
1	S	
2	M	Rent roll to the Accountant General, United Provinces, Allahabad
3	T	
4	W	
5	Th	
6	F	
7	S	
8	S	
9	M	
10	T	
11	W	
12	Th	
13	F	
14	S	
15	S	
16	M	
17	T	
18	W	
19	Th	
20	F	*Dasehra*
21	S	*Dasehra*
22	S	*Dasehra*
23	M	
24	T	
25	W	
26	Th	
27	F	
28	S	
29	S	
30	M	
31	T	

NOVEMBER, 1939.

Date	Days of week.	General and Office
1	W	Rent roll to the Accountant General, United Provinces, Allahabad
2	Th	
3	F	
4	S	
5	S	
6	M	
7	T	
8	W	Tennis and squash tournaments start
9	Th	
10	F	*Last Friday of Ramzan. Dewali.*
11	S	*Dewali*
12	S	
13	M	*Id ul Fitr* If the moon be visible on Monday the 13th November, 1939 then on 14th and 15th November.
14	T	*Id ul Fitr*
15	W	
16	Th	
17	F	
18	S	
19	S	
20	M	
21	T	
22	W	
23	Th	
24	F	
25	S	
26	S	*Guru Nanak's Birthday*
27	M	
28	T	
29	W	
30	Th	

DECEMBER, 1939.

Date	Days of week	General and Office
1	F	Rent roll to the Accountant General, United Provinces Allahabad
2	S	
3	S	
4	M	
5	T	
6	W	
7	Th	
8	F	
9	S	
10	S	
11	M	
12	T	
13	W	
14	Th	
15	F	
16	S	
17	S	
18	M	Indent of Treasury forms
19	T	
20	W	
21	Th	
22	F	Christmas Vacation commences
23	S	
24	S	
25	M	
26	T	
27	W	
28	Th	
29	F	
30	S	
31	S	

JANUARY, 1940.

Date	Days of week	General and Office
1	M	*New Year's Day.*
2	T	Rent roll to the Accountant General, United Provinces Allahabad
3	W	
4	Th	
5	F	
6	S	
7	S	
8	M	Indent of Provincial forms and College forms
9	T	
10	W	
11	Th	
12	F	
13	S	
14	S	
15	M	
16	T	Guru Gobind Singh's Birthday
17	W	
18	Th	
19	F	
20	S	2nd Year Civil Engineer Class survey camp starts
21	S	*Id-uz-Zuha*
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	
30	T	
31	W	Statement showing employment given to ex-soldiers in the United Provinces

FEBRUARY, 1940

Date	Days of week	General and Office
1	Th	Rent roll to the Accountant General United Provinces Allahabad
2	F	
3	S	
4	S	
5	M	
6	T	
7	W	
8	Th	
9	F	
10	S	2nd Year Civil Engineer Class survey camp ends
11	S	
12	M	
13	T	*Basant Panchmi*
14	W	
15	Th	
16	F	
17	S	
18	S	
19	M	*Muharram*
20	T	
21	W	
22	Th	
23	F	
24	S	
25	S	
26	M	
27	T	
28	W	
29	Th	

MARCH, 1940

Date	Days of week	General and Office
1	F	Rent roll to the Accountant General, United Provinces Allahabad
2	S	
3	S	
4	M	
5	T	
6	W	
7	Th	*Shiv Ratri*
8	F	
9	S	
10	S	
11	M	
12	T	
13	W	
14	Th	
15	F	
16	S	
17	S	
18	M	Certificate of count forms to be supplied to officers
19	T	
20	W	
21	Th	
22	F	*Good Friday*
23	S	*Saturday before Easter Holi*
24	S	*Holi*
25	M	*Easter Monday*
26	T	Registration of telegraphic address of College
27	W	Letter to Director of Public Instruction, United Provinces regarding training of apprentice overseers
28	Th	
29	F	Syllabi and courses of Study to be sent to the Director of Public Instruction United Provinces
30	S	
31	S	

APRIL, 1940.

Date	Days of week	General and Office
1	M	Rent roll to the Accountant General United Provinces, Allahabad
2	T	Debit of cost of training to be raised.
3	W	
4	Th	
5	F	
6	S	Correction to register of buildings to be sent to Director of Public Instruction, United Provinces
7	S	
8	M	
9	T	
10	W	
11	Th	
12	F	*Hardwar Fair*
13	S	
14	S	
15	M	
16	T	*Ram Naumi*
17	W	
18	Th	
19	F	
20	S	
21	S	*Bara Wafat*
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	
30	T	

MAY, 1940.

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces, Allahabad
2	Th	
3	F	
4	S	
5	S	
6	M	
7	T	
8	W	
9	Th	
10	F	
11	S	Statistical return to be sent to the Director of Public Instruction, United Provinces, Allahabad
12	S	
13	M	
14	T	
15	W	Detailed statement of permanent establishment to be sent to the Accountant General, United Provinces Allahabad
16	Th	
17	F	
18	S	Schedule of new demands to be sent to the Director of Public Instruction United Provinces, Allahabad
19	S	
20	M	
21	T	
22	W	
23	Th	
24	F	*Empire Day*
25	S	
26	S	
27	M	
28	T	
29	W	
30	Th	
31	F	Entrance examination for Civil Engineer and Draftman classes start

JUNE, 1940

Date	Days of week	General and Office
1	S	Rent roll to the Accountant General United Provinces
2	S	
3	M	
4	T	
5	W	Entrance examination for overseer class start
6	Th	
7	F	
8	S	
9	S	
10	M	
11	T	
12	W	
13	Th	King Emperor's Birthday
14	F	
15	S	
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	
23	S	
24	M	
25	T	
26	W	
27	Th	
28	F	
29	S	
30	S	Return of Textile requirement to the Director of Public Instruction, United Provinces

JULY, 1940

Date	Days of week	General and Office.
1	M	Rent roll to Accountant General, United Provinces, Allahabad
2	T	
3	W	
4	Th	
5	F	
6	S	
7	S	
8	M	
9	T	
10	W	
11	Th	
12	F	
13	S	
14	S	
15	M	Probable date of Convocation and Prize-giving
16	T	Annual vacation starts.
17	W	
18	Th	
19	F	
20	S	
21	S	
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	
30	T	
31	W	

APRIL, 1940

Date	Days of week	General and Office
1	M	Rent roll to the Accountant General United Provinces Allahabad
2	T	Debit of cost of training to be raised
3	W	
4	Th	
5	F	
6	S	Correction to register of buildings to be sent to Director of Public Instruction United Provinces
7	S	
8	M	
9	T	
10	W	
11	Th	
12	F	*Hardwar Fair*
13	S	
14	S	
15	M	
16	T	*Ram Naumi*
17	W	
18	Th	
19	F	
20	S	
21	S	*Bara Wafat*
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	
30	T	

MAY, 1940.

Date	Days of week	General and Office
1	W	Rent roll to the Accountant General, United Provinces, Allahabad
2	Th	
3	F	
4	S	
5	S	
6	M	
7	T	
8	W	
9	Th	
10	F	
11	S	Statistical return to be sent to the Director of Public Instruction, United Provinces Allahabad
12	S	
13	M	
14	T	
15	W	Detailed statement of permanent establishment to be sent to the Accountant General United Provinces Allahabad
16	Th	
17	F	
18	S	Schedule of new demands to be sent to the Director of Public Instruction United Provinces Allahabad
19	S	
20	M	
21	T	
22	W	
23	Th	
24	F	*Empire Day*
25	S	
26	S	
27	M	
28	T	
29	W	
30	Th	
31	F	Entrance examination for Civil Engineer and Draftman classes start

JUNE, 1940

Date	Days of week	General and Office
1	S	Rent roll to the Accountant General United Provinces
2	S	
3	M	
4	T	
5	W	Entrance examination for overseer class start
6	Th	
7	F	
8	S	
9	S	
10	M	
11	T	
12	W	
13	Th	King Emperor's Birthday
14	F	
15	S	
16	S	
17	M	
18	T	
19	W	
20	Th	
21	F	
22	S	
23	S	
24	M	
25	T	
26	W	
27	Th	
28	F	
29	S	
30	S	Return of Textile requirement to the Director of Public Instruction, United Provinces

JULY, 1940

Date	Days of week	General and Office
1	M	Rent roll to Accountant General, United Provinces, Allahabad.
2	T	
3	W	
4	Th	
5	F	
6	S	
7	S	
8	M	
9	T	
10	W	
11	Th	
12	F	
13	S	
14	S	
15	M	Probable date of Convocation and Prize-giving
16	T	Annual vacation starts
17	W	
18	Th	
19	F	
20	S	
21	S	
22	M	
23	T	
24	W	
25	Th	
26	F	
27	S	
28	S	
29	M	
30	T	
31	W	

AUGUST, 1940

Date	Days of week	General and Office
1	Th	Rent roll to the Accountant General, United Provinces, Allahabad
2	F	
3	S	Statement of non gazetted officers over 55 years of age on attaining that age
4	S	
5	M	
6	T	
7	W	
8	Th	
9	F	
10	S	
11	S	
12	M	
13	T	
14	W	
15	Th	
16	F	
17	S	
18	S	
19	M	
20	T	
21	W	
22	Th	
23	F	
24	S	
25	S	
26	M	
27	T	
28	W	
29	Th	
30	F	
31	S	

SEPTEMBER, 1940.

Date	Days of week	General and Office
1	S	
2	M	Rent roll to the Accountant General, United Provinces, Allahabad.
3	T	
4	W	
5	Th	
6	F	
7	S	
8	S	
9	M	
10	T	
11	W	
12	Th	
13	F	
14	S	
15	S	
16	M	
17	T	*Shab-i Barat.*
18	W	
19	Th	
20	F	
21	S	
22	S	
23	M	
24	T	
25	W	
26	Th	
27	F	
28	S	
29	S	
30	M	

OCTOBER, 1940

Date	Days of week	General and Office
1	T	Rent roll to the Accountant General United Provinces Allahabad
2	W	
3	Th	
4	F	
5	S	
6	S	
7	M	
8	T	Dasehra
9	W	Dasehra
10	Th	Dasehra
11	F	
12	S	
13	S	
14	M	
15	T	
16	W	Probable date of re opening the College
17	Th	
18	F	
19	S	
20	S	
21	M	
22	T	
23	W	
24	Th	
25	F	*Last Friday of Ramzan*
26	S	
27	S	
28	M	
29	T	
30	W	*Diwali*
31	Th	*Diwali*

NOVEMBER, 1940

Date	Days of week	General and Office
1	F	
2	S	*Id ul Fitr*
3	S	*Id ul Fitr*
4	M	Rent roll to the Accountant General, United Provinces
5	T	
6	W	
7	Th	
8	F	Tennis and squash tournaments start.
9	S	
10	S	
11	M	
12	T	
13	W	
14	Th	*Guru Nanak's Birthday*
15	F	
16	S	
17	S	
18	M	
19	T	
20	W	
21	Th	
22	F	
23	S	
24	S	
25	M	
26	T	
27	W	
28	Th	
29	F	
30	S	

THOMASON COLLEGE OF CIVIL ENGINEERING

Thomason College Advisory Council

1. T M LYLE, Esq C I E, I S E, Chief Engineer, Irrigation Branch Public Works Department, United Provinces—*President*
2. L B GILBERT, Esq, B SC, I S E, Chief Engineer, Public Works Department, Buildings and Roads Branch, United Provinces
3. The Director of Public Instruction, United Provinces
4. Thakur PHUL SINGH, Saheb, B A, LL B, M L A, Saharanpur — Representatives of the United Provinces Legislative Assembly.
5. Pandit KESHAVA DEVA MALVIYA, Saheb M SC M L A, Allahabad — Representatives of the United Provinces Legislative Assembly.
6. G LACEY, Esq B SC, M INST C E, Representative of the Institution of Civil Engineers, London S W 1
7. Rai Bahadur CHHUTTAN LAL M I E, Representative of the United Provinces Branch of Institution of Engineers, India
8. F A FARQUHARSON, Esq, M C, I S E, Chief Engineer Irrigation Works, Punjab, Representative of the Punjab Government
9. Dr N N GODBOLE M A, B SC, PH D (Berlin), Professor of Industrial Chemistry and Dean of the Faculty of Technology, Benares Hindu University, Benares, Representative of University Education, nominated by United Provinces Government
10. The PRINCIPAL Thomason College, Roorkee *Secretary*

COLLEGE STAFF

October, 1939

Prmcipal

Personal Assistant to Prmcipal and Superintendent, College Office

DEPARTMENTS

Civil Engineering

R B M C BIJAWAT B A I S E	Professor of Civil Engineering and Officiating Principal.
VINAYAK GOBIND GARDE, M SC, (ENGRG) (MANCH), A M I E	Assistant Professor of Civil Engmermg
K L BHATTACHARYA, M SC (ALL)	Lecturer in Chemistry.
P L SHARMA, G D ARCH (BOM), A R I B A, A I I A, M R S I M I B E (LONDON)	Lecturer in Drawing
S R SINGH, B SC, (ENG BRISTOL) A M I E	Lecturer in Surveying and P A P

Applied Mechanics and Mathematics Department

B D PURI, M A (CANTAB)	Professor of Pure and Applied Mathematics
	Lecturer in Mathematics
ANAND SARUP, M SC (ALL)	Lecturer in Physics



The Staff
Session 1938-39

Mechanical and Electrical Engineering

J CRAWFORD A M I MECH E	Assistant Professor of Mechanical and Electrical Engineering Lecturer in Electrical Engineering
B L SHARMA, B SC HONS (ELECT ENGRG BRISTOL) A M I E E	Lecturer in Mechanical Engineering
ZAKI UD DIN AHMAD B SC HONS D I C, PH D	(Engineering) London
RAFIQ AHMAD	Foreman Carpenter
NAND SINGH	Foreman Moulder
P C DUTT	Foreman Mechanic

Overseer Class and Draftsman Class

P C SEN GUPTA, B SC (ALL)	Head Master
Vacant	Instructor
JEWAN LAL	Instructor
RAGHUNANDAN LAL	Instructor

Office

MOHAN LAL BHARGAVA	Head Clerk
HARDWARI LAL	ACCOUNTANT

Library

MUHAMMAD ISHTIAQ ANSARI Librarian

GENERAL DESCRIPTION OF THE THOMASON COLLEGE

The Thomason College is a provincial institution maintained and controlled by the Government of the United Provinces but students are admitted under certain conditions from the Central Provinces Central India Rajputana and Burma the Governments of these Provinces paying the cost of training their students A few students are admitted annually from certain Indian States under special conditions Every candidate for entrance is required to produce certain educational and other certificates before he is permitted to appear in the annual competitive entrance examination of his class The competition is keen Candidates are not admitted from the provinces of Bengal Bombay Madras or Punjab as these provinces have their own engineering colleges Full details of the conditions of admission to the Thomason College appear in the circulars of the various classes These circulars are obtainable from the College on prepayment of 9 pies stamps for postage and are included in this calendar

The Thomason College now admits successful and fully qualified candidates to the following classes

(a) Civil Engineer Class
(b) Overseer Class
(c) Draftsman Class

The Course of Study in the College for each of these classes is given in the Course of Study and Syllabus pamphlet of the class These pamphlets are obtainable on payment from the College Book Depot and are included in this calendar The Civil Engineer Class course is of three years duration,

and candidates for it must not be under 17 or above 25 years of age on 1st June immediately preceding the competitive entrance examination, which is held annually in June. The Overseer Class course is of two years' duration and the age limits in this case are 16 and 25 years under the same conditions The Draftsman Class course is usually of three years' duration and there is no age limit, the qualifying educational standard for the entrance examination of the Draftsman Class is much lower than for the other classes and the entrance examination standard also is lower

The Civil Engineer Class course approximates to the degree standard in engineering of a British university The Thomason College grants a diploma on the successful completion of the course The first year of the course is devoted mainly to Mathematics, some Applied Mechanics (i e , theory of structures) and Science the second year chiefly to more advanced Mathematics more Applied Mechanics, Science, Surveying and some civil mechanical and electrical engineering and the third year almost entirely to civil engineering (including designs), with the addition of more mechanical and electrical engineering and surveying (including astronomy). An important test of a student s practical ability takes place in the third year, in which, after the preliminary projects, which are set, corrected and criticized by internal examiners, a two months' engineering project is set by an outside examiner The third year students go into camp for the first portion of this project period and each student works alone across country with his own instruments (theodolite, level and plane table), and his gang of men, returning to Roorkee when he has finished his work in the field to complete his report, designs, calculations, estimates and survey plates This test, which carries a large number of marks, effectually eliminates the pure theorist from the upper half of the class,

and brings to the fore the man of of common sense, ability, character and initiative The project work is *preceded by the* final examination which for this class takes place in the last week of March The Overseer Class students also execute at the end of second year a small project in Roorkee to test their practical ability and application of principles which they learn during their two years course This project is also preceded by the final examination which for this class takes place in the last week of April

For other classes sessional examinations are held in June before the end of each College Session also mid sessional examination for all classes are held by the first week of February each year Every student is required to obtain a certain qualifying standard (see pages 125 and 170) for promotion to the next class The college session usually begins on 16th October and usually ends on 15th July Each session is followed by a long vacation of three months during the unhealthy monsoon period when outdoor work would be impossible During each session the College closes for ten days at Christmas

According to the total number of marks obtained details of which are given on pages 125 and 170 the following awards are made to students who successfully complete the College course

Civil Engineer class students	An Honours or Ordinary Diploma
Overseer class students	A Higher or Ordinary Certificate
Draftsman class students	Certificate as Draftsman If qualified in estimating a remark to that effect will be given in the certificate

A successful Civil Engineer class student is usually posted as an unpaid apprentice to the Public Works department in the Province of his domicile for one year to learn practical methods of work and the control of labour

In the Overseer Class there are a certain number of paid apprenticeships for those who pass highest and are of United Provinces domicile. The others are offered unpaid apprenticeships. At the end of the year of apprenticeship, appointments to the Subordinate Engineering Service of the United Provinces depend on vacancies

An employment register is maintained for the benefit of those students who do not obtain employment or are out of employment

The probable current monthly expenses of a student are shown at end of the circular of each class A number of scholarships are awarded in the Civil Engineer Class, Overseer Class and Draftsman Class

The Thomason College main building is large and spacious It has laboratories, classrooms and model-rooms for the various departments The equipment of instruments and apparatus is complete and as up to date as funds permit. The College Workshops are also well fitted with machinery and apparatus The College has its own Dairy, Hospital, Book Depot, Meteorological Observatory and an electrical supply system giving current for electric lights, fans and motors in all buildings The drinking water is pumped direct from tube-wells into overhead reservoirs All the pumps are operated electrically. The Civil Engineer Class and Overseer Class students and some of the Draftsman Class students live in Hostels grouped in the rear of the College Each student of the Civil Engineer class has a furnished room and bathroom The Civil Engineer Class students have both a club and a common mess To join the former is compulsory and to join the latter is optional Most of the staff have detached bungalows with

gardens A plan of the College and a map of the estate appear at the end of this calendar Many facilities for recreation are provided for the students There are a number of tennis courts, squash racquets courts football and hockey grounds a cricket ground and a large boat club on the Ganges Canal with rowing and sculling boats The students are encouraged to take part in all games and sports in order to fit them for their profession and also for their own benefit Athletic Sports and a Regatta are held annually and all Civil Engineer Class students are now enrolled in the Indian Auxiliary Force or the University Training Corps for military training while the Overseer Class students perform physical drill under a military instructor Physical drill is compulsory for all students

HISTORY OF THE THOMASON COLLEGE.

The Thomason College, the oldest engineering college in India, owes its birth to the waters of Mother Ganges. Without the River Ganges there would have been no canal of that name, and, without the canal, no college at Roorkee. The Ganges Canal soon reached maturity, but its offspring, the Thomason College, planned by men of wisdom and foresight, grew steadily from the smallest beginnings till it attained the proud position which it now holds as one of the leading educational institutions of the East with great traditions and a reputation second to none

The establishment of an engineering college at Roorkee was suggested to the Honourable James Thomason, Lieut.-Governor of the North-West Provinces, about 1846, by Colonel Cautley of the Bengal Engineers, who had been Superintendent-General of Canals since 1836 and was busily engaged in the scheme, first contemplated by Colonel Colvin of the same Corps, for the employment of the waters of the Ganges for irrigation While there is no doubt that the immediate requirements of the Ganges Canal in engineer officers and subordinates were chiefly responsible for the foundation of the Thomason College, it is probable that broader issues also influenced the minds of Mr. Thomason and his advisers and that an important point was the necessity for some systematic training for Civil Engineers in India, or at least in Northern India. The Western Jumna Canals were commenced in 1817 and the Eastern Jumna Canal in 1822. In 1847 the annual expenditure on establishment for these undertakings was Rs. 1,04,000 and on annual repairs

Rs 35,000 In Dehra Dun, Rohilkhand and near Delhi, works for drainage and irrigation were maintained requiring skilful superintendence The roads from Jubbulpur to Mirzapur, the grand trunk roads from Calcutta to Delhi and from Agra to Bombay and the Land Revenue Settlement Survey had been completed It was apparent that there existed a large demand for skill in every branch of Civil Engineering To meet this demand there were officers of the Army, European non commissioned officers and soldiers and Indians To make these men efficient agents, the well educated Europeans, lately arrived in the country, required instruction in Indian languages and in the peculiarities of materials and construction in India The European soldiers required scientific instruction and the Indians, from their local experience and ability to bear exposure to the climate, were likely to prove efficient instruments if they were well taught and inspired with a proper sense of responsibility

As early as the year 1845 Lieutenant Baird Smith of the Bengal Engineers, then Superintendent of the Eastern Jumna Canal, began training young Indians at Saharanpur in Civil Engineering for the grade of Sub Assistant Executive Engineer and in 1846 twenty candidates were admitted to this class In 1847, after the First Punjab War, Lord Hardinge, the Governor General, determined on the vigorous prosecution of the Ganges Canal scheme This undertaking, especially in the first few miles of its course, was beset with great engineering difficulties Evidently it would tax to the utmost the skill, industry and resources of the people and country The science that was necessary to construct a work of this magnitude would also be kept constantly in exercise for its maintenance, improvement and extension Immediate measures were necessary to provide a constant supply of well trained and experienced Engineers Out of this emergency, the Roorkee College arose, later to be known as the Thomason College

The circumstances which caused the selection of Roorkee as the site for the College were thus stated in the proposal made to the Governor General on September 23, 1847 —

> The establishments now forming at Roorkee near the Solani Aqueduct on the Ganges Canal afford peculiar facilities for instructing Civil Engineers There are large workshops and most important structures in course of formation There are also a library and a model room Above all a number of scientific and experienced officers are constantly assembled on the spot or occasionally resorting thither These officers however all have their appropriate and engrossing duties to perform and cannot give time for that careful and systematic instruction which is necessary for the formation of an expert Civil Engineer On these accounts the Lieutenant Governor would propose the establishment at Roorkee of an institution for the education of Civil Engineers which should be under the direction of the Local Government in the Education department

The proposal obtained the immediate and cordial support of the Governor General in India On October 19, 1847, Lieutenant R Maclagan of the Engineers* was appointed Principal of the College and on November 25 of the same year a prospectus was issued, the establishment being fixed at a Principal, a Headmaster, an Architectural Drawing Master and two Indian Teachers The prospectus provided for three departments in the College The First Department was for candidates for appointment as Sub Assistant Civil Engineers It was laid down that they must be under 22 years of age must be able to read and write English easily and must have a knowledge of Geometry, Algebra, Mensuration, Plane and Spherical Trigonometry, Conic Sections, and Mechanics The number to be admitted was 8 annually The Second Department was for European Non-commissioned Officers and soldiers who had to pass an elementary test in Reading,

*Father of Sir Edward Maclagan late Governor of the Punjab

Writing, simple Drawing and very easy Mathematics before admission The number of admissions was limited to 10 annually These soldiers were trained to become Overseers in the Public Works Department The Third Department was for young Indians desiring free instruction in Surveying Levelling and Drawing These men were required to have some knowledge of Arithmetic and to be able to read and write Urdu Admissions were limited to 16 annually and qualified men were given certificates on leaving the College Annual examinations were held for all classes It will be noticed that the lengths of the courses were not specified, but it is believed that the Second Department course lasted 6 months only

When Lieutenant R Maclagan was appointed Principal in October 1847 not only were there no students, but there was no College The first students were admitted on January 1, 1848, by the transfer of a few young Indians, who were being instructed by Major W E Baker of the Bengal Engineers then Director of the Ganges Canal These men apparently joined the Third Department By August 1848, ten non commissioned officers and soldiers had joined the Second Department, which was then complete, but meanwhile, as no building was available work was carried on in tents A very small building the forerunner of the present Thomason College, was built for use during the hot weather of 1848 and was demolished later, when better accommodation was provided in the new College buildings This little building contained two classrooms (26′ × 32) a Principal's Office 20 × 23′, a hall of the same size and four small verandah corner rooms (16′ × 12′) for the Headmaster Drawing Master, Book Depot, and Store, with verandahs on all sides A plan of this miniature College—known then as the Roorkee College—hangs in the Thomason College corridor The site of the building is unknown, but presumably it was near the site of the existing College, possibly where the Principal's residence now stands Instructional

work was interrupted, in the winter of 1848 49, by the Second Punjab War, when Lieutenant Maclagan and the military students were absent on service for about two months, or, as it was ter ely put Marched for the frontier '

The year 1848 was an important one in the history of Roorkee In this year, 12 years after the first line of the Ganges Canal levels had been taken, Lord Hardinge then Governor General recommended the commencement of work on the Canal scheme with the utmost vigour and the Ganges Canal may be said to originate from that time The Canal Foundry Workshops were also established at Roorkee by Major Allen of the Bengal Army in that year and students of the Roorkee College attended there for practical instruction In 1850, the number of Military students admitted to the College was increased to 15 annually and on April 7 1851, there were 50 students of all classes Forty two men had already passed out

The year 1851 really marks the birth of the Thomason College as it now is At the end of the Second Punjab War, the Roorkee College, with its then existing establishment and accommodation was barely adequate for the instruction of the students and was utterly inadequate to meet the exigencies of the occasion Mr Thomason at once grasped the situation and prepared a scheme for enlargement

This scheme provided for —

1st—The admission of officers, both of the Royal and East India Company s armies, to study at Roorkee in a class called the Senior Department

2nd—The superintendence and improvement of the village schools around Roorkee as feeders for the Third or Indian Department of the College

3rd—The establishment, in connexion with the College, of a Depot for Mathematical and Scientific

instruments and of a workshop for their repair and manufacture

4th—The formation of a Museum of Economic Geology

5th—The erection of an Observatory for instruction

6th—The maintenance of metal and stone printing presses with a book binder s establishment and all the necessaries for the publication of scientific works with appropriate drawings and illustrations

7th—The enlargement of the College buildings and establishment to meet all these purposes

8th—The doubling of the number of students in the Second and Third Departments

The original cost of the College buildings, etc , was estimated at Rs 1 56 217 and the annual charge for the College at Rs 83 898

A valuable record of the origin of the Thomason College and the aims and objects for which it was established, is to be found in a pamphlet dated October 3 1851, drawn up by Mr Thomason Lieutenant Governor of the North-West Provinces The exact date of the commencement of the construction of the new College—afterwards called the Thomason College—is unknown but it seems that the work must have been started in 1852 The officer who designed the main building was Lieutenant Price of the 1st Fusiliers, then employed on the Ganges Canal, who later became Chief Engineer, Hyderabad There is reason to believe that Lieutenant Price also supervised the work of construction, *vide* Frontispiece, Volume III, of Colonel Cautley's Report on the Ganges Canal It is very remarkable that a junior Infantry Officer should have been capable of designing and building so large an edifice as the Thomason College and producing an example of Renaissance architecture which seems to be not unpleasing even to the eyes of professional architects, who have visited Roorkee in modern times The officers responsible for the selection

and acquisition of the site for the Thomason College and its estate showed wonderful judgment and foresight. They acquired in time 365 acres of land, including the high ground on which the College itself was built facing the north, in which direction the main range of the Himalayas towers in snowy grandeur above the nearer hills and lesser ranges The land was fertile, the water supply ample and the locality healthy, while, within a mile or two, some of the greatest engineering works in the world were in the process of construction It is recorded that the construction of the College was nearing completion in 1854 and that all the original buildings, including the main building, were completed in January, 1856, so that a period of about four years was required for the work. The front of the main building, viewed from the north, was as it is at the present day, except that there was no clock; but there were no rooms where the present Library and Convocation Hall exist—only covered passages—and the rear of the quadrangle was open except for a small model room and museum block in the centre As time went on the College was enlarged By 1873, the Library and Convocation Hall had been built and by 1896, the rear of the College had been closed by providing rooms for Science Departments, while still later a second storey was added over the south-east corner to accommodate the Photo School of the College Press Nevertheless, it can be said that the Thomason College was completed, as then required, in January, 1856, though the site had not the beautiful trees which now provide welcome shade around its lawns and gardens

Until the year 1854, the institution at Roorkee continued to be known as the "Roorkee College," but in that year the Honourable Court of Directors instituted a scholarship to be called the Thomason Scholarship, in memory of Mr Thomason and the Governor General ordered the Roorkee Colleg

to be called the "Thomason College of Civil Engineering" in the following notification —

No 6

OUR GOVERNOR GENERAL OF INDIA IN COUNCIL

PUBLIC DEPARTMENT

London February 8, 1854

Letter dated November 4 No 80 of 1853 Submitting for Court's sanction a proposal for the foundation of a scholarship or prize at the Roorkee College in memory of the late Mr Thomason

1 We entirely concur in the opinion you express that it becomes the Government of India to institute some enduring memorial of the eminent merits and services of Mr Thomason and we think that the object cannot be accomplished in a more appropriate manner than by connecting it with the College of Civil Engineering at Roorkee

2 We approve the proposal you have submitted to us and authorize you to carry it out in such a way as may seem to you most suitable At the same time we are of the opinion that the opportunity should be taken of marking our sense of Mr Thomason's public services and of connecting his memory with Roorkee College in a still more emphatic manner It appears to us very fitting that an institution of such peculiar importance to India and of a character so entirely novel in that country should bear the name of its founder and it is accordingly our desire that *the College be henceforth designated the Thomason College of Civil Engineering at Roorkee*

3 We direct that this change of name and the reasons for it be publicly notified in such form as you deem most suitable

We are, etc ,
(Sd) RUSSELL ELLICE
J OLIPHANT,
and other Directors

In 1856, when the Thomason College had been built, a Committee was appointed by the Lieut.-Governor to inquire into the past working and present condition of the College and to prepare a scheme for its extension to meet the demands of the Services. The recommendations of this Committee, most of which were approved in November, 1857, were not put into force at that time owing to the disorganization caused by the Indian Mutiny, but the more important alterations were carried out during the next year or two. These were as follows:—

1. A fixed date was introduced for admission to the Senior Department (Commissioned Officers) and the number for this department was fixed at 16.

2. First Department.—The non-stipendiary students were now styled the *English Class* and their number fixed at 10. A general educational test was prescribed in addition to the mathematical test at the entrance examination. The stipendiary students were termed the *Native Class* and an entrance test similar to that for the English Class was exacted. Students of the First and Senior departments were eligible for appointment as Probationary Assistant Engineers.

3. Second Department.—*Military Class*.—The number of students was fixed at 30. The course, however, was only for one year against two in the other departments.

Non-Military Class.—No alterations were proposed for this Class, but Indian students were now admitted.

4. Third Department.—*Vernacular*.—Various alterations in the syllabus and the requirement of a knowledge of English were prescribed for this department.

5. An evening class for Indian workmen in Drawing, Geometry and Estimating was started.

6. A Professor of Surveying was added to the staff, who was made Curator of the Instrument Depot; also a Professor of Practical Chemistry and Photography.

7 A College Museum was started, with models from England

8 An Observatory was sanctioned

9 A Gymnasium was sanctioned but was not provided till later

10 A soldiers' garden and the grounds generally were laid out and improved

11 The Press was reorganized and enlarged

12 The young officers and non commissioned officers and privates of the Sappers stationed at Roorkee, were required to attend the College as far as their duties would admit

Colonel R Maclagan R E the first Principal, retired in 1860, being succeeded by Captain E C S Williams, R E, who in turn, was succeeded by Major J G Medley, R E, in 1863 The latter held the post of Principal till 1870 For a few years there were no great changes but the College was expanding steadily In 1863, when the number of students had risen to 88 a Professor of Experimental Science was appointed In 1864 the College was affiliated (nominally) to the Calcutta University The course for the Senior and First Departments was extended to three years, unless a higher certificate was gained in two years Eight students were guaranteed appointments as Assistant Engineers and practically all officers from the Senior Department obtained employment Second Department students still remained only one year in the College and passed into the Public Works Department, Military students as 1st Grade, English Civilians as 1st or 2nd Grade and Indians as 3rd Grade In 1866, a Mistry Class was formed and also an Officers' Surveying Class for a 7 months' course in Military Surveying, Drawing and Field Engineering In 1868, an Indian Military Class (3rd Department) joined the College for a 2 years' course The names of the various classes were altered in 1870 by which time there were 231 students The Senior Department became the

"*Engineer Class*" (Military and Civil), while the Second Department became the "*Upper Subordinate Class*," and the Third Department the "*Lower Subordinate Class*" By 1870, the Staff had greatly increased and consisted of a Principal, two Assistant Principals, a Professor of Experimental Science and a Professor of Drawing These officers were assisted by a staff of masters for the Upper Subordinate Class under a Head Master and another staff for the Lower Subordinate Class The increase in the number of students and in the strength of the staff, between the years 1863 and 1870 was remarkable By 1870, the Thomason College had become a large and important institution, but very few Indians of good education entered it, indeed, between 1847 and 1873 only 17 Indians passed out from the Engineer Class or its equivalent the remainder being Europeans

Major A M Lang, R E, replaced Colonel J G Medley, R E, as Principal in 1871, and in the following year the Upper Subordinate Class course—up to then lasting one year only—was extended to two years In 1873, the Central Instrument Dépôt, located in the College, was transferred to the Canal Foundry and Workshops and a new Class for instruction of men of the Guides Corps in Surveying and Drawing was started About the year 1873, it became apparent that at last the more highly educated Indians had begun to realize the advantages of the Engineer Class, in which they could obtain an excellent education *gratis*, with the chance of a provision for life in a well-paid and honourable profession This is shown by the fact that, between 1873 and 1875, sixteen Indians passed out of the Civil Engineer Class

The history of the College, since its establishment, may be said to be divided into four periods and the year 1875 marked the close of the first period The chief characteristic of this period was the pecuniary aid given by the Government to most students in the way of stipends It was an era of

in an untrodden country and Government had to bear the cost of the journey But it was also a period of great industrial development and of great activity in the construction of railways, canals, roads and other aids to industrial enterprise The public mind was opening to the benefits of public works and to the advantages of Engineering as a profession The result was that in 1875 Government found it possible to restrict the financial help previously given to students and to limit the number of guaranteed appointments to the Public Service The years 1875 to 1896 may be termed the second period During these years though the pecuniary aid given to students was to a large extent done away with, most of them paid practically nothing for their education The training, however, was confined chiefly to Civil Engineering Surveying and allied branches and technical or industrial classes did not exist The years 1896 to 1920 may be called the third period when all students, except soldiers, paid fees, and the College was developed greatly as a Technical Institute, much stress being laid on Industries and Science From the year 1920 to modern times may be considered as the fourth period when the College reverted once more to the specialized training of Civil Engineers and subordinates, relinquishing Industrial and Mechanical and Electrical classes which were found to interfere with the more advanced training in Civil Engineering necessitated by modern conditions and were unsatisfactory in a non Industrial centre such as Roorkee

The Royal Indian Engineering College at Cooper's Hill in England, which opened in 1871 and closed in 1906, had an unfortunate effect on the entry of students to the Engineer Class at Roorkee after 1876 While 55 admissions to this class were made in 1876, only twenty were made in 1878, but the effect of Cooper's Hill College decreased later when more Indians appeared as candidates for entry. An entrance examination fee of Rs 20 was required for the first time in 1876

In 1878, Major A M Brandreth, R E , succeeded Colonel A M Lang, R.E , as Principal In 1881 the Guides Corps Class was thrown open to the whole Indian Army and was called the Native Military Survey Class In this year also, for the first time marks were allotted for physical fitness and for proficiency in athletics From the commencement of 1882 the entire financial responsibility for the College was thrown on the Local Government Under orders of the Secretary of State no Europeans except Royal Engineers, were to be appointed as engineers in India, except under his sanction, it being understood that Cooper's Hill College was to be the source whence they were to be recruited Indians of pure Asiatic descent were to be given all vacancies in the Public Works Department irrespective of the position they held after the final examination, European competitors only receiving, under special sanction, appointments for which Indians were unable to qualify This provision was altered in 1886 when guaranteed appointments were thrown open to all Statutory Natives of India The Professorship of Experimental Science was abolished and considerable reductions made in the staff, due probably to an anticipated permanent reduction in the number of Engineer Class students

Few events of importance seem to have occurred in the Thomason College between the years 1882 and 1894, except the abolition of the Military Section of the Lower Subordinate Class in 1885, the starting of a British Military Survey Class in 1888 and some changes in the Staff Colonel A M. Brandreth, R E , retired in 1891 being succeeded as Principal by Colonel F D M Brown, V C. of the Indian Staff Corps, but the latter officer vacated in 1892 when Major J. Clibborn became Principal The year 1894, however, is notable for the fact that in that year the last men for many years passed out of the Engineer Class into the Imperial Service The Provincial Service formed and the

equipped with the latest machinery run by electricity, were built at a cost of Rs 33,000 The Applied Science Laboratories were fully equipped A Physical and Mechanical Laboratory was provided The College Press was enlarged and remodelled and an electrically operated water-supply system for the whole College was installed Before the completion of all these alterations and additions which were necessary to carry out the details of the reorganization scheme of 1896, Colonel J Clibborn C I E, I S C went on furlough pending retirement in 1901 and his duties as Principal were taken over by Captain E H deV Atkinson, R E, who remained Principal from 1902 to 1915 when he left the College (as Lieut Colonel Atkinson, C I E, R E) to proceed on active service during the Great War A Council was created in 1901 to assist the Principal in regulating the courses of study and other matters which were recognized as outside the province of the Committee of Management A sub committee of this Council, now called the *Board of Studies*, still performs these duties though the Council itself has ceased to exist The enlargement of the Thomason College between the years 1896 and 1900 may be judged by the facts that the number of classes increased from 8 to 25, the number of students from 185 to 324, the fees from Rs 4 121 to Rs 16,784 and yet the yearly cost of the entire management fell from Rs 1,48,261 to Rs 1 32,064 These facts were pointed out by Sir A P MacDonnell, Lieutenant Governor, in a speech delivered at Roorkee on November 6, 1900, when he added that it was the object of Government to develop the Thomason College into a Technical Institute for the North West Provinces and Oudh, which should control, stimulate and inspire technical teaching of all kinds Experience, however, showed later that advanced technical instruction was not easy at Roorkee and could not be given there except at the expense of higher civil engineering instruction The

Thomason College, with its 25 classes, was becoming very complicated though such expansion may have been expedient under the industrial and technical conditions then obtaining

Captain Atkinson R E in 1902, set about the reorganization of the interior economy of the College Fortnightly examinations—a trial both to the staff and students—were abolished The session was for the first time divided into three terms and the examinations grouped together at the end of each term A new time table was introduced and the allotment of marks re arranged The length of each attendance, which had so far been invariably 3 hours, was changed to 1½ hours except for certain subjects such as Laboratory work and Drawing The arrangement of the staff was altered Each branch of study was placed under a Professor with assistants who were responsible for the teaching of that branch throughout the College A Dairy was started in connexion with the College stores which had been founded by the staff and students In July the College was visited by the Lieutenant Governor Sir Digges LaTouche and as a result of his inspection a number of much needed buildings were sanctioned In the early part of 1903 most of these buildings were completed They included a building for the stores and dairy a bazar a central power house improvements to the quarters new latrines the completion of the system of drainage and a house for the Applied Science Instructor A grant of Rs 24 000 was sanctioned to be spread over four years for bringing the supply of surveying instruments in the College up to date In 1904 further improvements in interior economy were made The syllabuses for all the classes were revised and brought up to date The list of text books in use was revised and recent and more approved methods of instruction in Geometry and Mechanics introduced A start was made to equip a Mechanical Laboratory for the practical teaching of Mechanics Instead of specified text books for

the Entrance examination of the Civil Engineer Class, a brief Syllabus was prepared for each subject and published in the Circulars A Survey Class for Indian Officers of the Imperial Service Troops was held for the first time The Mechanical Apprentice Class which was started in 1896, was placed on a more practical basis, an entrance examination introduced, and the course altered to three years at College and two years as Indentured Apprentices in outside workshops The rules for the Draftsman and Computor Class were altered and an examination in Drawing was held for men who had passed the Lower Subordinate Class Entrance examination but failed to obtain vacancies Mr P P Philips Ph D, joined the staff as Instructor in Chemistry in 1904 The College Press was reorganized, the Typographic branch being reduced and the Lithographic branch developed The terms of admission to the Industrial Apprentice Class were altered, the payment of scholarships in special cases being substituted for stipends The College had indeed entered upon an era of strenuous reorganization and expansion

On April 8, 1905, H E the Viceroy, Lord Curzon, inspected the Thomason College and on March 7, 1906 the College was greatly honoured by a brief visit from Her Royal Highness, the Princess of Wales (now Her Majesty Queen Mary), who afterwards presented portraits of H. R H the Prince of Wales and herself to the College The Lieutenant Governor—Sir J J. D LaTouche—visited the College during 1905 A Professor of Surveying and Drawing and a Demonstrator in Chemistry were added to the staff in 1905 and Mr A M McLean joined the staff as an Instructor in Mechanical Engineering in 1906 In the year 1907, a large scheme for the further development of the College as a Technical Institute was sanctioned The Lieutenant-Governor at that time—Sir John Hewett—was greatly interested in industrial and technical education An electric light, fan and

telephone system was installed in the College main building, the Workshops and the Principal s residence New engines of ample power were laid down A Technical Class was started and the Mechanical Apprentice Class enlarged To meet these increases additional hostel accommodation was built the workshops doubled in size new classrooms built, additional staff entertained a new water supply inaugurated and last but not least new laboratories for the College sanctioned at a cost of Rs 94 000 In the following year (1908), the buildings sanctioned in the expansion scheme were practically finished and the new engines and water works installed An Automobile Driver Class was started and good progress was made at first in training drivers The Calcott Reilly Memorial Fund from the late Cooper s Hill College was handed over to the College to be given for Applied Mechanics in the Civil Engineer Class Mr C J Veale joined the College Staff in 1908 as Professor of Surveying and Drawing The new accommodation for the Photo Mechanical Department (the College Press) was completed in 1909 and in this year the late expansion of the Professorial staff necessitated a scheme to provide new and better staff bungalows A site in the vicinity of Malikpur village was acquired and the village removed to Khanjarpur Mr P P Phillips who was appointed on five years contract was taken into the Indian Educational Service In October 1909 His Honour the Lieutenant Governor Sir John Hewett visited the College and opened the new laboratories additions to workshops and the electrical and power installations and a new double storeyed hostel A sub committee of the College Council was formed into a *Board of Studies* to advise on all matters connected with courses examinations and time tables In 1910 the Technical Class was abolished and arrangements made to form a Department of Technology Major H B D Campbell, R E (Assistant Military Principal), left the College in which

employment in India Mr E S Griffith, an Instructor obtained an I A R O commission in May, 1917 and Mr G Lacey, who joined the College as Professor of Civil Engineering in November, 1915, also obtained a commission in 1917 and both left the College Many European students who had passed out of the College, received commissions, and the names of those students killed in the War appear on a brass memorial tablet in the College It is evident that the War took a heavy toll of the College Staff and instruction became increasingly difficult Funds were also scarce, so that any large expansions had to be postponed till better times Nevertheless the instructional work continued The Public Works Department assisted the College by recommending the appointment as Principal of Mr W Gunnell Wood C S I, late Chief Engineer Buildings and Roads Branch United Provinces and this appointment was made in October 1916 Sir James Meston Lieut Governor, visited the College in February 1916

The Public Works Reorganization Committee visited the Thomason College in 1917 and in July of that year His Honour, the Lieut Governor of the United Provinces, Sir James Meston presided at the annual Convocation The Indian Defence Force came into existence, replacing the Mussoorie Volunteer Rifles, and all British subjects in the College were enrolled in the new formation Admissions to the Textile Class ceased in 1918, but the class was not transferred finally to Cawnpore till January, 1920 The declaration of the Armistice was duly celebrated in November, 1918 and the College settled down to consolidate its position in the difficult times which succeeded the War when political unrest in certain districts and lack of funds for new schemes rendered the task of Government no easy one Mr E F Tipple, Professor of Mathematics vacated his post in April, 1919, after

22 years' service at the College during which he twice officiated as Principal In February, 1920, Major E W C Sandes D.S O , M C , R E , re joined the College Staff from leave after the War as a Professor of Civil Engineering and subsequently officiated as Principal for several months during the absence on leave of Mr W G Wood, C S I During 1920 and 1921, the College suffered heavily through the deaths of Mr F W Sedgwick, Professor of Electrical Engineering and Physics who had served on the College Staff for 23 years and Sub Conductor G E Lansley, Personal Assistant to the Principal, on March 22, 1920, and October 6, 1921, respectively Mr W L Stampe, I S E , was appointed as a second Professor of Civil Engineering in November, 1920 and Mr J M Salusbury Trelawny as a third Professor in October 1921 There were many changes in the superior staff at this time, due to the altered conditions after the close of the War and the retirement of officers, who had carried on the work ably during the War

It is not proposed in this history, to deal with changes of staff other than professorial staff, except in unique cases and as regards professors merely to mention the times of their first appointments and dates on which they vacated their posts finally Officiating appointments and those owing to leave vacancies are too numerous and would make the history unwieldy Reference to the Annual Report at the end of the Calendar of any year will show in detail the changes in the staff during that year For easy reference a list of Principals follows this History in the Calendar and also a list of Convocation Presidents, *i e*, officers who presided at the Annual Convocations and Prize givings A further list of very distinguished visitors is added Many other senior officials have also visited and continue to visit the College; the Annual Report of each year shows their names, and, needless to say, the College welcomes such indications of their interest in it

A complete Reorganization Scheme for the Staff of the Thomason College, dated July 12, 1919, was drawn up in that year by the Committee of Management of the College to suit the new requirements of Government under the Reforms Scheme and the new policy laid down for the future of the College and it was duly submitted to the Secretary of State The scheme was necessitated by the proposal to close down certain classes in the College as mentioned hereafter. The Committee of Management proposed certain modifications of the original scheme in May, 1920 and final sanction to the amended scheme was accorded by the Secretary of State on January 29, 1922 After 1920, admissions to the Upper Subordinate, Lower Subordinate, Industrial Apprentice and Mechanical and Electrical Engineer Classes ceased It had been decided finally that the training of Mechanical and Electrical specialist students and Industrial and Technical students was not suited to Roorkee and this decision marked the end of the scheme to develop the Thomason College as a Technical Institute The cessation of recruitment to the Upper and Lower Subordinate Classes and the consequent disappearance of the last students of these classes in July 1922, was brought about by changes in the organization of the Public Works Department under which many sub-divisions were to be in the charge of Assistant Engineers (Provincial Service) instead of Upper Subordinates This scheme made it advisable to train sub overseers to a standard higher than the Lower Subordinate Class recruits for the new Subordinate Engineering Service Hence, when the Upper Subordinate and Lower Subordinate Classes were to be abolished in the College, a scheme was prepared to replace them by a new Overseer Class of intermediate standard The new Overseer Class was approved and the first students were admitted in October, 1922, for a 3 years' course, 40 vacancies being offered annually for com-

petition This 5 years' course was later reduced to 2 years The former Lower Subordinate Class Staff was transferred to the Overseer Class, but later the instruction was supervised and assisted also by the Lecturers of the Civil Engineer Class It was originally intended that the Overseer Class should be located at Roorkee only until buildings were ready at Lucknow to accommodate it The last students of the Mechanical and Electrical Engineer Class and the Industrial Apprentice Class passed out of the College in July, 1923, but a class for Drafts men was retained and still exists A batch of 20 Military students was admitted to the College in January, 1922, as a special case, to meet the requirements of the Military Engineer Services (old M W S) for a short course of training approxi mating to that of the abolished Upper Subordinate Class with due regard to the shorter duration This batch left the College in July, 1923 A second batch of ten Military students only was admitted in October, 1922 and passed out in July, 1924 and with that batch the class ceased to exist in the Thomason College and all College students up to July, 1935 have been civilians Since October, 1935 3 Indian Military Academy Gentlemen Cadets are to be admitted to the Civil Engineer class annually after they have passed the entrance examination to undergo a course of post graduate training corresponding to that of Cambridge with a view to their obtaining Commissions in the Indian Engineers

In the year 1921 the College Committee of Management was replaced by an *Advisory Council*, constituted under G O No 1573/XV—312 dated July 10, 1920 The last meeting of the Committee of Management (45th) was held on July 9 1920 and the first meeting of the Advisory Council on February 17, 1921 The Council was formed with 10 members as compared with 7 members constituting th Committee, but the number of members in the Council since increased The status of the Thomason Colleg,

improved owing to the Government of India offering to the Civil Engineer Class 10 or 9 vacancies in alternate years, in the Indian Service of Engineers, as *guaranteed appointments* This step by which employment in the Imperial Service was again thrown open to highly qualified students, was a return to the practice in vogue up to 1894, when students could pass into that Service The constitution of the Indian Defence Force was changed in 1921 to the Auxiliary Force (India) and the College detachment (Europeans) became a part of the Mussoorie Battalion being organized as a Machine Gun Section As increased accommodation for professors was required one thatched bungalow almost opposite the Royal Engineers' Mess was replaced by a pukka building in 1920 and in 1921 the construction of a pukka bungalow was commenced opposite the Royal Engineers' Mess and another further east In October 1921, Mr W G Wood C S I vacated the post of Principal and was succeeded by Major E W C Sandes D S O M C, R E

His Excellency the Governor of the United Provinces Sir Harcourt Butler K C S I C I E presided at the College Convocation and Prize giving in July 1922 In this year a Committee was appointed by Government to inspect the College Press with a view to possible economies through the transfer of the control of the Press to the Superintendent of the Government Press Allahabad (then Mr Abel) Though the Committee recommended the transfer, the Advisory Council was averse to it and Government accepted the opinion of the Council The two new bungalows for professors were completed in 1922 and funds were given for the transfer of the Textile (Cotton) Machinery to Cawnpore and the conversion of the Textile Building into an Annexe for the Overseer Class instruction The benefits of the sanctioned Reorganization Scheme were felt in this year All members of the instructional staff were allowed rent free quarters from October

1922 and salaries were improved Mr. H P. Jordan, Professor of Mechanical Engineering, then on leave, was transferred to the Poona Engineering College in October, 1922 Mr. Dhawan, Mr Raja Ram, Mr. B. D Puri, and Mr. Shiv Narayan joined the Staff as Professors of Civil Engineering (Railways), Civil Engineering (Sanitary), Mathematics and Electrical Engineering and Physics respectively, also Mr. Chuckerbutty as Assistant Professor of Surveying and Drawing But Mr Shiv Narayan and Mr Chuckerbutty were transferred elsewhere after one session and the posts remained vacant and Mr Dhawan also left in October, 1923.

His Excellency Sir William Marris, K C S I., K C.I E., who succeeded Sir Harcourt Butler as Governor, presided at the Convocation in July, 1923 This occasion was unique in that the Governor of the Punjab, His Excellency Sir Edward Maclagan, K C S I, C I E, was also present and distributed the prizes at the request of Sir William Marris Sir Edward Maclagan had been invited in view of his connexion with the College through his father, Colonel R Maclagan, R E, who was the first Principal A portrait of Colonel Maclagan, presented by His Excellency Sir Edward Maclagan in commemoration of his visit, hangs in the Convocation Hall. Mr. C. J. Veale, Professor of Surveying and Drawing, officiated as Principal for a period of six months in 1923 (including the College vacation), in the absence of Major Sandes. In November, 1923 sanction was given to the formation of one Platoon of the 3rd (Allahabad) Battalion of the University Training Corps (Indian Territorial Force), at Roorkee, thus enabling the Indian students to undergo military training for the first time Applications for enrolment far exceeded the vacancies and there was great keenness Unfortunately the strength of one Platoon did not allow of the actual enrolment of more than one half of the Civil Engineer Class students, but the remainder received military drill instruction The

Overseer Class students continued to receive instruction in physical drill

Major General Sir Edwin Atkinson, K B E , C B , C M G , C I E , Master General of Supply and a former Principal of the College, presided at the Convocation in July, 1924 During this year the grant for repairs was increased and much necessary and overdue work was carried out, including re roofing the College bazaar buildings and the com pletion of new out buildings and the re roofing of servants' quarters Dr P P Phillips on return from leave, officiated as Principal from October 1923, till the return from leave of Major E W C Sandes in October 1924 A Special Com mittee was assembled by Government at Roorkee in Decem ber, 1924 to investigate certain matters connected with the syllabi courses of study and staff of the College, arising out of the introduction of the Reorganization Scheme of 1919 A very comprehensive report was submitted by this committee in 1925, which was subsequently dealt with, item by item by the Advisory Council, whose recommendations caused Government to sanction several useful alterations and innovations in the College courses Mr A C Verrieres, C I E , Chief Engineer, Buildings and Roads Branch, Public Works Department, United Provinces, an old student of the College, presided at the Convocation in July, 1925, this being the first instance of a past student performing this duty An extension of the Indian Engineer Class Club was put in hand and also several internal alterations in the College itself and in hostels, and re roofing of certain bungalows with jack arches A very fine steel model of a plate girder bridge span, on a large scale, was presented to the College by Messrs Burn and Co , Howrah, and installed in one of the College model rooms, which have been developed into useful instructional depart- ments Mr R A Bradshaw Smith, I S E , joined the Staff as Professor of Civil Engineering (Irrigation), in February,

1925, Mr L E Dawson having acted temporarily since Mr W L Stampe vacated the post in October, 1924

The President at the College Convocation in July 1926, was His Excellency Sir Malcolm Hailey, K C S I, C I E, Governor of the Punjab He was invited to preside because the Punjab had of late years been so largely represented in the College Indeed the Punjab candidates for the Civil Engineer Class had become as numerous as those from the United Provinces the Punjab paying the expenses of the training of every such candidate who gained admission though admissions were limited The Board of Studies in 1926 formulated proposals for the improvement of the Overseer Class course and instruction A grant was given by Government for the purchase of additional plant for the College Workshops which lacked modern generating machinery Two vestibules, one classroom and three offices were re roofed in the main College building and also certain servants quarters and small out houses Another lecturer s bungalow was re roofed with jack arches

The Convocation President in July 1927, was Mr (now Sir) B D O Darley C I E I S E Chief Engineer Sarda Canal and Secretary to Government United Provinces, Public Works Department Irrigation Branch Mr Salig Ram I S E, an old student joined the Staff in June 1927 as Professor of Civil Engineering The College was grieved to learn of the death of a distinguished past student, Sir Ganga Ram During the summer a new flagstaff was erected in front of the College

This brief history having now been written up to the end of the College Session of 1926 27—a period of 80 years since the foundation of the Thomason College in 1847—it may be well to continue it year by year in the form of *a Sessional Diary* including the *preceding* vacation *i e*, by yearly periods from July 15 to July 15 and this system will henceforth

be adopted It should be realized that all facts and events cannot be recorded in the History, but only those of importance

Session 1927 28 —A great event in the Session 1927 28 was the visit of His Excellency the Viceroy, Baron Irwin of Kirby Underdale, G M S I , G M I E , to the Thomason College on April 11 1928 His Excellency and Staff detrained in the early morning, motored round the College estate and then visited the Workshops and inspected the College and later inspected also the College Press before departing by motor for Dehra Dun His Excellency inspected a Guard of Honour of the College students and was photographed with the staff, students and visitors He expressed himself much gratified with all he saw and presented a photograph to the Principal an enlargement of which appears in the College Convocation hall The honour of this visit was greatly appreciated by the College as a whole, and particularly since no Viceroy had visited the institution since Lord Curzon came in 1905 His Excellency the Viceroy was pleased to enter the following remarks in the College Visitors' Book —

> It gave me great pleasure to visit the Thomason College to day and to see with my own eyes the institution which has turned out so many famous engineers The equipment was obviously of a high standard and the curriculum appeared to me very comprehensive and wisely drawn for its purpose I was greatly impressed by all I saw and by the many evidences of the way in which Colonel Sandes and his Staff are carrying on the work I am very grateful to him for giving me so interesting and instructive a morning and to him as to the College Staff and its students I can wish nothing better than that the College may maintain the high standard and tradition which is associated with its name
>
> IRWIN "

The Principal, Lt -Col E W C Sandes, D S O , M.C , R E , was placed on deputation for one month in November, 1927, with the Rangoon University to advise about the Engineering College at Rangoon and he proceeded to Burma for this purpose The Civil Engineer Class students passing out

of the Thomason College in July, 1928, were the first batch for many years to whom the Government of India guaranteed no appointments in the Indian Service of Engineers, such guarantee having been withdrawn in the case of students entering in October, 1925 and thereafter The entrance examination to the Civil Engineer Class in June, 1928, was also the first examination conducted under a revised syllabus of a higher standard than formerly with the approval of Government and the Advisory Council and stipulating also a higher qualifying standard than before for permission to sit for that examination *viz* the Intermediate or equivalent standard in place of the Matriculation or equivalent It was anticipated that this raising of standards would cause a marked decrease in the number of candidates but such is the reputation of the Thomason College and the prospects offered to students that this was not the case Indeed 203 candidates, who were qualified under the new rules entered for the examination in June 1928, in competition for the usual 30 ordinary annual vacancies in the Civil Engineer Class In the Overseer Class 236 candidates entered for 40 vacancies During the summer of 1928 most of the College staff benefited by the recent completion by the Public Works Department of temporary lines on the College estate for the supply of electric current from Bahadarabad Consumers made their own arrangements for temporary internal wiring and fittings, pending permanent arrangements, but were able to draw current, on payment from the Public Works Department through the sub station erected in 1927 on the College estate The Students' Mess and Club similarly benefited The first P W D Power Installation at Bahadarabad was completed in 1913 and was arranged to supply alternating current to the Canal Headworks at Bhimgoda only, the alternators being driven by turbines operated by canal water In 1924—26, however, the power station was greatly enlarged, alternative plant was installed

and the electric supply given to Hardwar and adjacent places A line was laid also to supply the whole of Roorkee, including the College, part of whose electric current now comes indirectly from its parent, the River Ganges The new water supply system for the College estate, however, could not be installed as funds were not available A very large steel model road bridge of Baltimore Truss type, with overhead bracing, was received during 1927 from Messrs Burn and Co , Howrah, and placed in the bridge model room during the Session 1927-28, complete with framed diagrams and calculations Most of the cost was generously met by the firm The liquidation of the College Stores was completed The staff and students of the College learnt with the deepest regret on June 17, 1928, that His Excellency the Governor of the United Provinces Sir Alexander Muddiman, Kt , K C S I , C I E , had died on that day His Excellency had undertaken to preside at the Annual Convocation in July, 1928 In consequence of this tragic event, Mr A H Mackenzie, C I E , Director of Public Instruction United Provinces, presided at the Convocation and distributed the prizes and certificates This function brought to a close a notable Session—the first since 1905 in which the College had been honoured by a visit from a Viceroy A silver challenge cup, to be awarded annually to the best student in Games and Sports, was donated to the College by the Principal, Lieut Colonel E W C Sandes and was presented to the first winner at the Convocation, together with a miniature cup Another silver challenge cup was donated by Mr B D Puri, Professor of Mathematics, for Squash Racquets Doubles, and a third cup by Mr J Barnett, Personal Assistant to the Principal, for the Overseer Class in the Athletic Sports These cups were also presented at the Convocation A fourth silver cup, for an annual cross country race, was promised by Mr R A Bradshaw-Smith, Professor of Civil Engineering on

leaving the College, when reverting to his Department in 1928.

Session 1928-29 —The Hon'ble Raja Bahadur Kushalpal Singh, the United Provinces Minister for Education, presided at the Annual Convocation in July, 1929 Dr P P Phillips officiated as Principal from May, 1929 until the end of the session in place of Colonel Sandes who was granted leave. During the year funds were provided by Government for the installation of electric light in all the College residential quarters, a benefit which was appreciated by all concerned. The separate department of Electrical Engineering and Physics was abolished and the instruction in Electrical Engineering transferred to the Mechanical and Electrical section at the Workshops Physics was combined with the work of the Chemistry Department, which henceforth will be known as the Department of Applied Science Lt J S Gurney took charge of the post of Head Master, Overseer Class, from the beginning of the session

Session 1929 30 —Mr P H Tillard, I S E, Chief Engineer, P W D, B & R Branch, U P, presided at the Annual Convocation in July 1930 Colonel Sandes proceeded on leave preparatory to retirement with effect from March 7, 1930 and Mr P P Phillips was appointed to succeed him as officiating Principal in the first instance

Session 1930 31 —Mr A H Mackenzie, C I E, Director of Public Instruction United Provinces, visited Roorkee from April 8 to 10 and inspected the College Mr W. Roche, C I E, I S E, Chief Engineer, P W D, Irrigation Branch, U P, presided at the Annual Convocation The European students' mess of the Civil Engineer Class had to be closed owing to paucity of members, after having been in existence for 31 years Up to the last its members had a very fine record both in work and games.

Session 1931-32 —The Retrenchment Committee, appointed by Government for the Thomason College presided over by the Hon'ble Mr J P Srivastava, M Sc, A M S T, M L C, Minister for Education, United Provinces, met in Roorkee from November 12 to 14 1931 His Highness the Maharaja of Jaipur visited the College in January, 1932, and Major General Addison on July 6 1932

The Photo Mechanical and Litho Department and Book Depôt ceased to be departments of the College with effect from March 1 1932 The course of instruction in photography was abolished and the last award of medals in photography was made at the convocation on July 14, 1932

Dr P P Phillips PH D, F I C I E S, Principal was superannuated with effect from March 22, 1932, after serving the Thomason College for 28 years and Mr Raja Ram, *Professor of Civil Engineering succeeded him as officiating* Principal from that date

Mr Gerald Lacey I S E, Professor of Civil Engineering, proceeded on leave with effect from April 21 1932 and reverted to the Irrigation Branch United Provinces from October 17, 1932 and Mr M L Garga Assistant Research Officer, Irrigation Branch, officiated as Professor of Civil Engineering up to July 15 1932 in his place

Professor Gerald Lacey offered an annual prize of Rs 25 to be awarded to a Civil Engineer Class student for the best performances at the meetings of the Thomasonian Society during each session

Mr C J Veale F R G S, F R A S, Professor of Surveying and Drawing retired on pension with effect from March 8, 1932

Dr M A Hamid, PH D, M Sc, joined as Temporary Professor of Applied Science on October 22, 1931

Lieut Col C A Bird, D S O, R E presided at the annual convocation

Session 1932 33 —Many of the changes ordered by the Government in accordance with the report of the Retrenchment Committee which met in Roorkee from November 12 to 14, 1931 became operative with the start of this session

The departments in the Civil Engineering Course were reduced from 5 to 3 The Department of Applied Science was abolished, Physics being added to the Department of Pure and Applied Mathematics and Chemistry Geology and Mineralogy to the Department of Civil Engineering The Department of Survey and Drawing was amalgamated with the Department of Civil Engineering and its professorship reduced to an assistant professorship

The changes in the staff were —

(i) Abolition of the post of Professor of Applied Science

(ii) Abolition of one of the posts of Professor of Civil Engineering thereby reducing the number from 3 to 2

(iii) Abolition of two posts of Instructors of the Overseer Class reducing the number from 5 to 2

(iv) Abolition of one of the two posts of Lecturers in Mechanical Engineering

(v) Abolition of the post of Superintendent of the College Office and combining this post to that of the Personal Assistant to the Principal

Further from the start of this session the Principal in addition to his ordinary duties became head of the Department of Civil Engineering and was called upon to lecture

Mr H J Amoore, I S E, became Principal from October 6 1932

Mr H T Cumming was appointed Assistant Professor of Survey and Drawing from the start of the session and Mr J Crawford ceased to be a lecturer in Mechanic

Engineering, becoming Headmaster of the Overseer Class from the same date relieving Mr H T Cumming

Rai Bahadur Debi Datta Mal, I S E, was appointed Professor of Civil Engineering, joining his appointment in February, 1933, thereby relieving Mr M L Garga, who reverted to his substantive appointment in the Irrigation Branch of the P W D, United Provinces

Raja Jwala Prasad, retired Chief Engineer, Irrigation Branch P W D U P, presided at the Annual Convocation

Session 1933 34 —Major A M McLean, Assistant Professor of Mechanical and Electrical Engineering who joined the staff of this College in October, 1906 left in March, 1934 on leave preparatory to retirement Mr J Crawford, Head Master, Overseer Class, officiated in his place in addition to his own duties

The Hon ble Sir J P Srivastava, Kt M Sc, M L C, Minister for Education, United Provinces, presided at the Annual Convocation

Session 1934 35 —Mr H J Amoore, Principal proceeded on leave out of India from March 15 1935 Professor Mahabir Prasad who joined the College as Professor of Civil Engineering on the forenoon of December 7, 1934, officiated as Principal from March 15, 1935

Mr J Crawford continues to officiate as Assistant Professor, Mechanical and Electrical Engineering

Mr P C Sen Gupta took over charge as officiating Head Master, Overseer Class on February 11, 1935

Captain J Barnett proceeded on privilege leave from May 13, 1935, for 2 months 25 days

Mr P L Sharma, Lecturer in Drawing, proceeded on leave out of India for 6 months 21 days in continuation of College vacation of 1934, from October 22, 1934, but had to return earlier and resumed charge on December 8, 1934

Mr P S Bhatnagar officiated as lecturer in Drawing in his place from October 22 1934 to December 8, 1935

A special committee appointed by the Government to report on the revision of syllabus and course of study Civil Engineer class held its sitting in the College on January 6 and 7, 1935

Sir Sita Ram President of the Legislative Council, paid a visit to the College on April 26 1935

Session 1935 36 —Mr W M G Dawson, I S E, joined the Staff as Professor of Civil Engineering in the vacancy caused by Rai Bahadur Debi Datta Mal, I S E, reverting upon completion of his term of office to the Irrigation Department United Provinces

Mr W M G Dawson I S E, proceeded on leave combined with the College vacation in March, 1936 and Mr K N Kathpalia I S E was appointed in his absence to deliver lectures in Hydraulics and Irrigation

In accordance with arrangements made by the Army Headquarters India with the Government of the United Provinces, Indian Commissioned Officers from the Indian Military Academy joined the Civil Engineering class of the College Three officers joined, 2nd Lieutenants A N Kashyap N S Bhagat and Anant Singh

Session 1936 37 —Messrs Mahabir Prasad, I S E, and W M G Dawson, I S E Professors of Civil Engineering reverted to their substantive appointments in the Public Works Department of the United Provinces, on March 15, 1937, and July 7 1937, respectively

Major H Williams, R E, joined the Staff on October 8, 1936, being the officer deputed by Army Headquarters, Simla, to be in charge of the Indian Commissioned Officers undergoing a post graduate course in Civil Engineering and P... of Civil Engineering

Mr Raja Ram on completion of his period of 3 years as Malarial Engineer with the Government of India resumed his post as Professor of Civil Engineering on July 10, 1937

Mr H T Cumming, Assistant Professor of Survey and Drawing proceeded on leave combined with the 1937 College vacation on April 9, 1937

Mr J Crawford officiating Assistant Professor of Mechanical and Electrical Engineering, was confirmed in that post from March 28 1935

Major Barnett Personal Assistant to Principal and Superintendent of the College Office was away on leave from November 4 24 1936

Mr M L Misra Lecturer in Electrical Engineering, was on leave on medical certificate from October 27 1936, to February 20 1937

Lala Phumman Ram Instructor Overseer Class, retired from service from January 4 1937

Session 1937 38 —Mr Raja Ram, Professor of Sanitary Engineering proceeded on long leave on October 16, 1937 and rejoined on April 18 1938

Mr Romesh Chandra I S E joined the staff as Professor of Civil Engineering on October 18 1937 and reverted to his substantive appointment upon completion of the session

Mr P Chakravarti Lecturer in Pure and Applied Mathematics, was on leave from April 13, 1938 to May 11 1938

The Hon'ble Pandit Govind Ballabh Pant B A, LL B, Premier United Provinces visited the College on December 2, 1937 and addressed the students

The Hon ble Mr Pearey Lal Sharma Minister for Education United Provinces visited the College on December 21 1937, and gave away the prizes at the Annual Sports

Mr R S Weir, Director of Public Instruction United Provinces visited the College in June 1938

At the close of the session passed out the first three Indian Commissioned Officers, who joined the College in October, 1935 for a 3 years post graduate course in Civil Engineering

Sir William Stampe KT, C I E very kindly presented a challenge cup for Inter class athletic events This was first awarded and won by the Civil Engineering class, 3rd year

Mr Puran Mal, retired Assistant Engineer Public Health Department donated a sufficient sum to provide annually 2 silver medals one for the Civil Engineer class and one for the Overseer class The medals to be known as the Puran Mal silver medals for Public Health Engineering The medals to be awarded annually to those students who obtain the highest marks in the final examination on Sanitary Engineering and Water Supply The medals were first awarded at the Convocation in July 1938

Session 1938-39—Mr H J Amoore Principal proceeded on leave preparatory to retirement from May 5 1939 and Major C D Reed R E carried on his duties in addition to his own till July 15 1939 and made over charge to Mr B D Puri Professor of Mathematics on July 16 1939

Major H Williams R E Professor of Civil Engineering and officer in charge of Indian Commissioned Officers reverted to Defence Department from November 7 1938 and was succeded by Major C D Reed R E, who also reverted to Defence Department from July 16, 1939

Mr Raja Ram Professor of Civil Engineering resigned from May 8 1939

Mr B D Puri, Professor of Mathematics was on leave on medical certificate from January 18, 1939 to April 5, 1939 and Mr P Chakravarti, Lecturer in Mathematics officiated as Professor of Mathematics during the period

Mr H T Cumming, Assistant Professor of Survey and Drawing was on leave on medical certificate from December 22 1938 to February 13, 1939 when he was invalided by the Medical Board His duties were carried on by Mr S R Singh, Lecturer in Surveying

Major J Barnett P A P retired on March 7, 1939

Mr P Chakravarti, Lecturer in Mathematics proceeded on leave preparatory to retirement from April 6, 1939

Mr P L Sharma Lecturer in Drawing was on leave from January 27 1939 to February 28, 1939 and his duties were performed by Mr H J Amoore, Principal and Major J Barnett P A P

Mr M L Misra Lecturer in Electrical Engineering was on leave from October 28 1938 to December 14, 1938 when he was invalided by the Medical Board

His duties were performed by Lieutenant Colonel J Crawford, Assistant Professor of Mechanical and Electrical Engineering and Mr B L Sharma, Lecturer in Mechanical Engineering

The Hon ble Sri Sampurnanand B SC , Minister for Education United Provinces visited the College on April 11, 1939

His Excellency Sir Harry Haig, K C S I , C I E , I C S , Governor of the United Provinces accompanied by Lady Haig visited the College on July 15, 1939 and presided at the Annual Convocation

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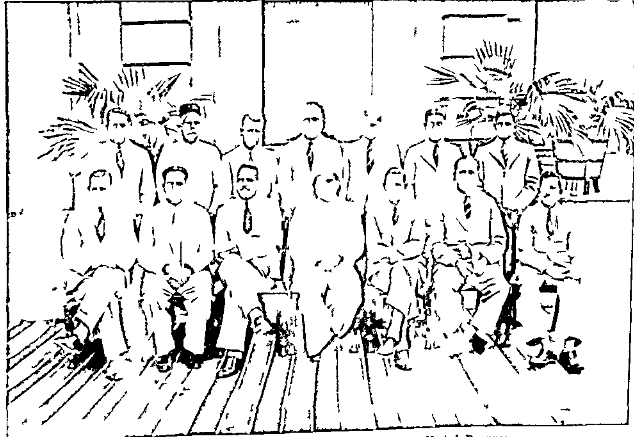
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Staff with the Hon ble the M nister of Educat on Un ted Provinces

The Defence Department withdrew its Indian Commissioned Officers, who were undergoing post-graduate course in this College and along with them their officer-in-charge from the end of this session

A Committee appointed by Government to reorganize this College visited the College on July 7, 8 and 9, 1939.

LIST OF PRINCIPALS

Colonel R Maclagan, R E	1847—1852
Major Oldfield, R E (Offg)	1852—1856
Colonel R Maclagan, R E	1856—1860
Captain C E S Williams R E	1860—1862
Colonel J G Medley R E	1863—1871
Colonel A M Lang R E	1871—1877
Colonel A M Brandreth R E	1877—1891
Colonel F D M Brown V C I S C	1891—1892
Lt Col J Clibborn C I E I S C	1892—1902
Lt Col E H deV Atkinson C I E R E	1902—1915
W G Wood Esq C S I	1916—1921
Lt Col E W C Sandes D S O M C R E	1921—1931
Dr P P Phillips PH D F I C I E S	1931—1932
H J Amoore Esq I S E	1932—1939

NOTE—The ranks shown are those held on vacating the appointment Officiating Principals are omitted from the list but many names appear in the Calendar of 1911 and the names of Mr L [illegible] [illegible]pple Mr C [illegible] Veale and Mr Raja Ram may be added for recent years

His E[illegible] HARRY HAIG K C S I C I E I C S
[illegible]or of the United [illegible]

LIST OF CONVOCATION PRESIDENTS

FROM 1890

1890 The Hon ble Sir Auckland Colvin K C M G , C I E , Lieut Governor, N -W P

1891 Mr T H Wickes, Chief Engineer, P W D , N -W P

1892 The Hon ble Sir Auckland Colvin, K C M G , C I E , Lieut Governor, N W P

1893 Mr A H Harington, I C S , Commissioner, Meerut Division

1894 Mr J G H Glass, C I E , Chief Engineer, P W D , N W P

1895 to 1897 Principal, Thomason College (Lt -Col J Clibborn, I S C)

1898 Offg Principal, Thomason College (Lt H B D Campbell, R E)

1899 to 1901 Principal, Thomason College (Lt Col J Clibborn, I S C)

1902 His Honour Sir J J D LaTouche, K C S I , Lieut Governor, U P

1903 Principal, Thomason College (Major E H deV Atkinson, R E)

1904 Lt Col A E Sandbach, R E , 1st Sappers and Miners, Roorkee

1905 Lt Col S V Thornton, R A , O C Station, Roo

FROM 1890

(Of ranks included in Articles 1 *to* 30 *only of the Warrant of Precedence,* 1922)

1890 The Hon ble Sir Auckland Colvin, K C M G , C I E , Lieut Governor N W P

1892 The Hon ble Sir Auckland Colvin, K C M G , C I E , Lieut Governor N W P

1895 His Honour Sir A P MacDonnell K C S I , Lieut - Governor N W P

Lieut General Sir W K Elles, K C B , Commanding the Forces in Bengal

1900 His Honour Sir A P MacDonnell, K C S I , Lieut - Governor N W P

1901 The Bishop of Lucknow

1902 His Honour Sir J J D LaTouche, K C S I , Lieut - Governor, U P

Major General W T Shone, C B , D S O , D G M W

Major General Beresford Lovett, C B , D G M W

1903 Sir A T Arundel, K C S I , I C S , Member of the Viceroy's Council

1905 His Excellency Lord Curzon of Kedlestone, P C , G M S I , G M I E , Viceroy and Governor-General of India (April 8)

His Honour Sir J J D LaTouche, K C S I , Lieut.-Governor, U P

1906 Her Royal Highness the Princess of Wales (March 7)

1913 Lord Islington, P C , G C M G , D S O , Chairman, Royal Commission on the Public Services in India

1916 His Honour Sir James Meston, K C S I, Lieut-Governor, U P

1917 His Honour Sir James Meston, K C S I, Lieut-Governor, U P

General Sir Charles Munro, G C B, G C M G, G C S I Commander in Chief in India

Lieut General Sir George Kirkpatrick, K C B, K C S I, Chief of Staff in India

1918 Lieut General Sir H D Keary, K C B, D S O, G O C Meerut Division

1919 Mr T R J Ward, C I E, M V O, Inspector General of Irrigation in India

General Sir Charles Munro, G C B, G C M G, G C S I, Commander in Chief in India

1920 Lieut General Sir Havelock Hudson, K C B, C I E G O C in C Eastern Command

1921 General Sir Claude Jacob, K C B, K C M G, Chief of the General Staff in India

Major General Sir Edwin Atkinson K B E, C B, C M G, C I E, Master General of Supply India

Mr E St J Gebbie C I E, Inspector General of Irrigation India

Mr B N Sarma, Revenue and Public Works Member Government of India

1922 His Excellency Sir Harcourt Butler, K C S I C I E Governor U P

Field Marshall Sir William Robertson G C B G C M G K C V O D S O

The Hon'ble Mr C Y Chintamani, Minister for Education and Industries, U P

1923 His Excellency Sir William Marris, K C S I K C I E Governor, U P

His Excellency Sir Edward Maclagan, K C S I K C I E, Governor, Punjab

Major General Sir Edwin Atkinson, K B E, C B C M G C I E Master General of Supply, India

The Hon ble Raja Parmanand Minister for Education, U P

1925 The Hon ble Rai Rajeshwar Bali, O B E, Minister for Education, U P

Major General R N Harvey, C B, C M G, D S O, Engineer in Chief Army Headquarters, India

1926 His Excellency Sir Malcolm Hailey, K C S I, C I E, Governor, Punjab

The Hon'ble Sardar Jogendra Singh, Minister for Agriculture, Punjab

1928 His Excellency Baron Irwin of Kirby Underdale G M S I, G M I E, Viceroy and Governor General of India (April 11)

1929 The Hon'ble Raja Bahadur Kushalpal Singh, M A LL B, Minister for Education, U P

1931 The Hon ble Mr J P Srivastava, M Sc, Minister for Education U P

1932 H H the Maharaja of Jaipur

Major-General Addison Engineer-in Chief, Military Engineering Service in India

1933 Major General J E S Brind, Deputy Chief of the General Staff Army Headquarters

1935 Sir Sita Ram Kt President Legislative Council

1936 Major General H S Gaskell, Engineer in Chief

1937 R S Weir, Esq , I E S Director of Public Instruction United Provinces

The Hon ble Pandit Pyare Lal Sharma M A , LL B , Minister for Education, United Provinces

The Hon ble Pandit Govind Ballabh Pant, B A LL B , Premier and Minister of Home Affairs and Finance United Provinces

1938 F A Farquharson, Esq , Secretary to Government, Punjab, P W D , I B

R S Weir, Esq , I E S , Director of Public Instruction United Provinces

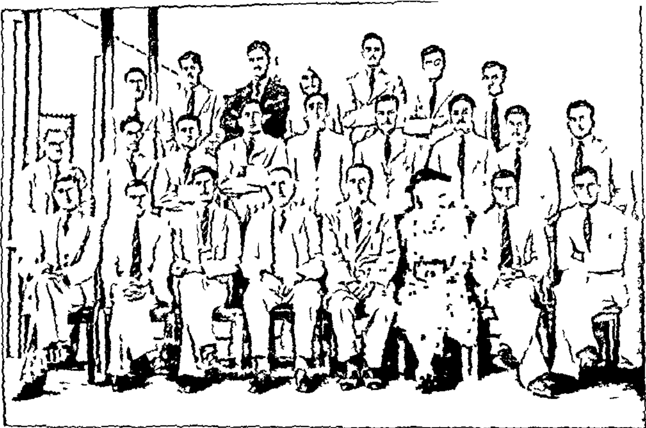
1939 The Hon ble Sri Sampurnanand B Sc , Minister for Education, United Provinces

His Excellency Sir Harry Haig, K C S I , C I E , I C S , Governor of the United Provinces and Lady Haig

List of distinguished passed students of the Thomason College

1851 C C Anderson Esq
1856 Lieutenant General H E Whish
1860 Lieutenant General W K Elles
1861 Lieutenant Colonel W H Mackesy
1863 General D A Jackson
1864 W C Wright Esq
1865 H L Monk, Esq
1866 Lieutenant Colonel A C Bigg Wither
1868 Lieutenant Colonel J F Miller
1868 C G Palmer Esq
1870 J S Slater Esq
1871 L W P Foster Esq
1871 F R Bagley Esq
1872 Sir W Willcocks, K C M G
1872 G M R Field Esq
1873 Sir W E Garstin
1872 Rai Bahadur Sir Ganga Ram, C I E
1876 W MacDonald Esq
1876 W B Gwyther, Esq
1877 J T Farrant Esq
1878 C S R Palmer, Esq
1878 W E T Bennet, Esq , C S I
1878 G M Harriot Esq , C I E
1879 C E V Goument, Esq , C S I
1881 F E Gwyther, Esq
1881 R I Purves, Esq
1882 G F Anthony, Esq
1882 J M Taylor, Esq , C I E
1883 F O Oertel, Esq
1883 C V D Pratt, Esq
1885 A J Wadley, Esq

1886 Rai Bahadur Rala Ram C I E I S O
1886 C H Wollaston Esq
1888 Sir J Eaglesome K C M G
1889 H W M Ives Esq C I E
1889 F T Bates Esq
1890 F W Allum Esq C B E
1891 J N Taylor Esq C I E O B E
1891 C B Mellor Esq
1892 W C W Muller Esq O B E
1893 A C Verrières Esq C I E
1893 V Stainton Esq
1894 C E Rushton Esq
1895 R V Symons Esq O B E
1895 Rai Bahadur Lala Bishun Swarup
1898 Sir J B G Smith C I E
1898 H Dale Green Esq
1900 Raja Jwala Prasad
1901 E I Glass Esq
1902 E B Robey Esq
1904 Rai Bahadur Chuttan Lal
1904 F R Morgan Esq
1904 Rai Bahadur B Natha Singh
1905 C W M Collins Esq
1906 Rai Bahadur P L Dhawan
1906 A F Watkins
1907 F T Jones
1908 Khan Bahadur Mohammad Abdul Aziz C I E
1909 Rai Sahib Gurcharan Das Mehta



H.E. Excellency the Governor of the United Provinces with the Civil Engineering 3rd year Students



The rules in this Circular are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR.]

THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

These rules apply to admissions in 1940 and till further notice.

CIVIL ENGINEER CLASS.

1. Candidates for admission to this class through the entrance examination must be Indians as defined below.* Candidates whose parents or guardians are domiciled in Bengal, Madras and Bombay Presidencies are, however, not eligible for admission without the previous sanction of the Local Government. Candidates must not be under 17 or above 21 years of age on June 1, immediately preceding the entrance examination in which they wish to appear.

Overage candidates are allowed to sit for the competitive entrance examination provided they are not over 25 years of age, on June 1, immediately preceding the entrance examination in which they wish to appear. Should they qualify, they

* A 'Native of India' means any person domiciled in British India or within the territories of Indian Princes tributary to or in alliance with His Majesty and born of parents habitually resident in India and not established there for temporary purposes only.

NOTE.—To constitute residence in a particular province or state the parent or guardian of a candidate for admission to the Thomason College, Roorkee must have definitely settled and resided there for a period of three ye

will be allowed to enter the college provided the number of candidates of the correct age, who qualify, is less than the sanctioned strength of the class Such candidates will not be eligible for academic prizes or United Provinces Government scholarships

Only such private students from outside United Provinces or States within or outside the United Provinces will be admitted to the Civil Engineer Class of the College, who previously apply through the Government of the Province or State in which they reside for permission to appear in the entrance examination and provided that the Government or State concerned agrees in the event of such students gaining a place in the examination which would entitled them to admission to pay a contribution towards the cost of their training based on the actual of the preceding financial year The only exceptions to this rule will be where the United Provinces Government agree in special cases to waive this contribution or the students themselves agree to pay it

From the entrance examination to be held in June 1939 inclusive the Punjab Government will not nominate nor pay for any student admitted to this College from that province

There is however no bar to the admission of a candidate from that province should the parent or guardian of any candidate be willing to pay the cost of training in addition to the ordinary fee and living expenses at the College

The name and age of a candidate will be taken from the original university records and for candidates who have not appeared for a university examination from college or failing a college from school records No alterations in the records will be recognized except in the case of purely clerical errors Application for examination must be accompanied by a true copy of university college or school registers as the case may be signed by the registrar principal or head master

and under no circumstances will any alteration be accepted to the advantage of the candidate

All Europeans before admission must be properly protected by inoculation against enteric fever to the satisfaction of the Medical Officer in charge of the College If not protected, they must be inoculated on arrival at the College

2 No European or Anglo Indian will be allowed to enter the College if married or to continue in the College, if h marries before completing his course

3 The College session commences on October 1 Applications for admission should *reach* the Principal, *comple in all respects*, *not later* than April 15, nor befo February 1, preceding The entrance examination will b held in the first week of June or thereabouts All applicatio should be accompanied by a statement of—

Date of birth of the candidate

The school or schools at which he has been educate

The profession situation relationship and residence his father or guardian

One of the examination centres where he wishes to b examined (*vide* paragraph 9)

N B —Great care should be taken to ensure that forn are complete in every respect Incomplete forms are liab to be rejected Forms of application with instructions shov ing how they should be filled in may be obtained on reque from the Principal Samples of forms are shown in tl appendices

4 Every candidate will be required to produce testim nials (which will not be returned) of good moral conduc signed by the instructor under whom he has been educated, of some other superior under whom he may have been er ployed or brought up and these testimonials should ha reference especially to his conduct during the two years imm diately preceding his application for admission

5 A medical certificate must be furnished in the form as shown in the appendices, no other form will be accepted

NOTE 1—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

6 An "examination fee of Rs 20* must be forwarded by postal money order with the candidate's application, until this fee has been received by the Principal, the candidate's application will not be registered In no circumstances will this fee be refunded

7 The minimum qualifying test for admission to the entrance examination in the case of candidates from non European institutions is the Intermediate Examination of the Board of High School and Intermediate Education, United Provinces or the Intermediate Examination of any University in British India established by law, or, in the case of candidates from European Schools the Cambridge School Certificate with credit' in additional Mathematics and a pass in either Chemistry or Physics, or the London University Matriculation Certificate which covers the subjects required for the entrance examination or such other qualifications as may be accepted by Government as equivalent thereto Those candidates who have appeared for any of the examinations noted as the qualifying tests before the date of the College entrance examination but the results of which have not been published before the last date for submission of their applications to the Principal are allowed to sit provisionally for the College entrance examination Such candidates must however, furnish with their application forms, a certificate signed by the Head of their School or College stating that they have so appeared Their marks will be excluded from the result sheet if the information of their passing the qualifying

* Cheques or crossed Postal Orders in payment of the fee will not be accepted The College Cashier will grant a receipt for fee paid in cash by the candidates at the counter and this receipt must be attached to the application form

tests are not communicated before the publication of the results of this College

8 The entrance examination is competitive and those who stand highest on the list of passed candidates (only to the number of available vacancies which is for the present fixed at 30) will be selected for admission to the College Provided the candidates pass the qualifying entrance examination six places will be reserved for Moslems one for Harijans one for other minority communities from the United Provinces The Local Government has power to relax in very special cases the rule regarding the number of admissions Any candidate who after being duly notified fails to join the College on the day fixed for the re opening of the session or, who, before that date fails to obtain from the College authorities definite permission to join on some later date will forfeit his right to admission

No replies will be given to any telegrams or letters enquiring the results of the entrance examination. A copy of the printed results will be sent to each candidate when published

9 The following is the list of the four groups of subjects for the competitive entrance examination The examination will be held by means of written papers at the following centres only viz Roorkee Allahabad Lucknow, Agra Naini Tal and Mussoorie * Candidates may elect the centre at which they wish to be examined

GROUP No I LANGUAGES (250)

(a) English Essay, General Knowledge, and Every Day Topics

3 Hours 150 *Marks*

The candidates will be required to write a short essay on a given subject The subject set will not be one requiring deep knowledge or thought

* The fixing of Mussoorie as a centre is conditional on sufficient candidates being forthcoming

On General Knowledge and Every Day Topics questions will be set on (i) the more important topics of the day and (ii) simple literary, geographical, scientific and other questions

The chief object of the English Essay and of the questions on General Knowledge and Every Day Topics is, in the first instance, to test the ability of the candidates to express themselves in clear and correct English as well as their general knowledge and interest in current affairs

Marks up to 10 per cent of the maximum may be deducted for bad handwriting errors in spelling, careless work and much crossing out

(b) Hindustani

2 Hours 100 *Marks*

Translation of extracts in the Persian or Hindi character from an easy Hindustani book and of easy English sentences into colloquial Hindustani and grammatical questions Full marks will not be given to candidates unable to write the Persian or Hindi character but the Hunterian system of transliteration may be adopted

GROUP No II * MATHEMATICS (300)

(a) Mathematics I (Arithmetic, Geometry and Mensuration).

3 Hours 100 *Marks*

In this paper questions will be set on problems on (i) General arithmetic principles (ii) the subject matter of plane geometry comprising the syllabus as required for the High School Examination of the United Provinces Intermediate Board, and (iii) mensuration of plane rectineal figures and of solids like parallelopipeds prism pyramids cones, cylinders, spheres and their sections

*No books of any kind are allowed in the Examination halls Logarithmic tables if required will be supplied by the officer conducting the examination They should not be employed to avoid ordinary abridged arithmetical calculations

Candidates will be expected to be familiar with abridged methods of calculation. In geometry proofs of proposition and simple riders involving solution of graphical problems may be set.

(b) Mathematics II (Algebra, Trigonometry and Co-ordinate Geometry).

3 Hours 100 *Marks*

Algebra.—General Algebraic principles, factors, fractions, solution of linear simple and simultaneous and of quadratic equations, elementary properties of ratio proportion and various elementary graphics and graphical solutions of equations. Binomial theorem for positive index and use of binomial and exponential theorems for any index. Elementary partial fractions. Simple arithmetic and finite geometrical sequences. Use of logarithms.

Trigonometry.—Trigonometrical ratios and their values in special elementary cases. General properties of the ratios and identical relations between them. Formulae for ratios of multiple and sub-multiple angles. Elementary relations between ratios and circular measure. Elementary properties of triangles. Use of logarithms and trigonometrical tables. Solutions of triangles, heights and distances. Elementary properties of quadrilaterals and regular polygons. Elementary inverse notation. Solution of equations. De Moivre's theorem.

Co-ordinate Geometry.—Elementary co-ordinate geometry of the straight line and the circle (both in Cartesian and polar co-ordinates), including also the elementary properties of the parabola and the ellipse (in Cartesian ordinates only).

(c) Mechanics (Dynamics and Statics).

3 *Hours* 100 *Marks.*

Velocity, composition of velocities, relative velocity, acceleration, composition of acceleration, graphical representation

Laws of motion, force, units of force, moments of forces; composition of coplanar concurrent and parallel forces; couples Reduction of a set of coplanar forces and conditions of equilibrium graphical treatment of forces Determination of centroids in simple cases, Friction and its laws

Projections neglecting resistance, motion in circular path, centripetal and centrifugal forces, principles of conservation of mementum and energy, angular velocity and acceleration, moments of inertia in very simple cases; simple harmonic motion, simple and compound pendulums

GROUP No III PHYSICAL SCIENCE (100)

(a) Physics.

1½ *Hours* 50 *Marks.*

Simple Physical Measurements, liquids and gases Barometry

Heat and Temperature Thermometry and calorimetry, expansion with variations of temperature, Fusion, evaporation boiling point, vapour pressure, latent heat, conduction, convection, radiation and mechanical equivalent of heat

The production and propagation of sound, nature of wave motion, reflection of sound, resonance and determination of velocity

Propagation, reflection and refraction, critical angles, mirrors, lenses, spectrum, simple telescopel microscope phogometer.

Properties of magnets induction magnetic fields, lines of force the law of magnetic force and magnetic moments

Conductors and insulators, electrification by friction and induction influence machines distribution of electrical charge on conductors potential, electrical capacity, primary cells properties of the electric current, currents and resistance measurements Ohm s law series and parallel connexions, shunts

No practical examination is prescribed, but all candidates are expected to have previously undergone an elementary course of practical work in laboratory

(b) Chemistry.

1½ *Hours* 50 *Marks*

General properties of matter simple and compound substances, laws of chemical combination, acids, bases and salts, metals and non metals combustion, oxidation and reduction Atomic and molecular weights chemical equivalents, the atomic theory symbols, formulae, simple chemical equations, Avogadro's rule Dulong and Patit s law, Boyle's law, Charles' law; vapour density, diffusion, and an elementary knowledge of solution, dissociation and electrolysis The preparation, general properties and principal compounds of hydrogen, oxygen, nitrogen, the halogens, carbon, sulphur, phosphorus and silicon

No practical examination is prescribed, but all candidates are expected to have previously undergone an elementary course of practical work in a laboratory

GROUP No IV DRAWING* (150)

(a) Geometrical Drawing.

8 *Hours* 100 *Marks*

Lettering and printing, Construction of simple, Diagonal and Vernier Scales The whole of plane Geometry. The

*Particular attention is called to this subject in which many candi fail to qualify

methods of drawing different kinds of arches Elementary projections and sections of simple solids The course is covered by Chapters 1—7 inclusive of the Thomason College Manual of Drawing, Part I

(*b*) **Freehand Drawing.**

1 *Hour* 50 *Marks*

A line drawing of a conventional kind or of some simple object or group will be given to the candidate who will be expected to enlarge or reduce it to a given scale All work will be done by the unaided hand no rulers, etc, being allowed

10 To pass the examination a candidate must obtain 33 1/3 per cent. of the 250 marks for Group I, Languages and 33 1/3 per cent. of the 150 marks for Group IV, Drawing; 33 1/3 per cent of the 100 marks for the Mathematics, Paper I, 33 1/3 per cent. of the 100 marks for the Mathematics, Paper II, and 33 1/3 per cent. of the 100 marks for the Mechanics Paper, and 33 1/3 per cent. of the total aggregate number of marks, viz. 800. No marks will be allotted in any paper if a candidate obtains less than 20 per cent. and up to 10 per cent. of the marks in each paper may be deducted for slovenly work.

11 Sixteen scholarships of Rs 50 a month are sanctioned for this class. Of these scholarships six will be awarded to first-year students, five to second-year students and five to third-year students.

These scholarships are awarded to first-year students on the results of the entrance examination and to second and third year students on the results of the first and second year's work and examinations and are tenable for the *nine months of the College session* All the scholarships are reserved for candidates of the United Provinces

Government has been pleased to sanction the award of a Passing Scholarship of approximately Rs 250 to Rs 300 pay-

able from the College Stores Trust Fund to the senior European or Anglo-Indian student, who successfully passes the third-year Final Examination of the Civil Engineer Class, after completing the whole course of three years

12 A College tuition fee of Rs 24 per mensem will be paid during the session by each student of the class irrespective of his domicile

13 The engineer class students maintain and run a common mess, catering for vegetarians, non-vegetarians, and those messing according to European diet The students in the running of this mess are helped by 2 members of the staff, appointed by the Principal each session, as President and Vice-President respectively All students are advised to join Should they not do so, they have to make their own arrangements for messing

14 Students are encouraged to take up military training by joining either the Indian Auxiliary Force or the University Training Corps Physical Training is compulsory

15 It is desirable that every student should be able to swim before joining the College

16 Each student should on joining the College, be provided with a good set of drawing instruments and necessary class books for his own use Class books are obtainable at the College Book Depot

17 Quarters are provided for all students of the Civil Engineer Class in hostels near the College, a student being given a room to himself The charges for rent and conservancy are Rs 5-12 per mensem The hostels have been electrified, the charges for current being annas four per unit Students have to provide their own fans.

18 A limited number of sets of furniture, as detailed below, are available for issue to students in order of seniority for which a monthly rental of Rs. 2-8 is charged:—

1 Bed cot with mosquito frames and mattress
1 Armless chair
1 Easy chair.
1 Table (large), with book shelf
1 Small table
1 Towel rack
1 Chest of drawers

Students should arrange to bring their own mosquito nets and durries

19 Every candidate before he can be allowed to join the College must satisfy the Principal that he has sufficient means to defray his expenses during his course at Roorkee

Any student failing to pay his College dues,* or to make sufficient progress in study, will be suspended or ultimately removed from the College The parent or guardian of any student so suspended or removed shall be held responsible for the payment of any debts whatsoever which may have been contracted while the student was in the College Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt

* The word College "dues" includes—
(i) College fees.
[illegible]
[illegible] of articles purchased from recreation stores
[illegible]
[illegible] Mess

20 The College year usually commences on October 16 and closes on July 15 Candidates admitted to the College on the results of the entrance examination held in June will be informed on what date to join the College in the following October

21 Students in the Civil Engineer Class are trained for the Indian Engineering Services and the Civil Engineering profession generally Many have gained employment outside India

22 **The Civil Engineering Course extends over three years** In the third year in June the final examination is held, when those students who have completed their course of study and have qualified will receive Diplomas

A fee of Rs 40 is payable in the third year in April by each student, who intends to appear for this examination If a student, having paid the fee, does not eventually appear for the examination, the fee will not be refunded

23 The marks each student has to obtain to qualify for admission to the second and third year and to obtain the College Diploma in Civil Engineering, awarded upon completion of his third year are as follows

(a) For admission to the second year, the first year students are required to obtain 33 per cent of the marks allotted to each Group and 50 per cent of the total marks Those who fail to qualify as above will be given one more chance for admission by repeating the first year class Such students will not be eligible to compete for the United Provinces Government Scholarships or academic prizes

(b) To return to the College at the end of the second year the students are required to obtain 33 per

cent of the marks allotted to each Group, in that year (i e in the second year), and 50 per cent of the total marks for the two years, i e , of the full marks for the second year together with the reduced marks of the first year

(c) To pass out of the College at the end of the third year, the students are required to obtain 33 per cent of the marks allotted to each Group, in that year (i e the third year), and 50 per cent of the total marks for the three years, i e of the full marks for the third year together with the reduced marks for the first and second years

(d) The ordinary Diploma is awarded to students who qualify as above and obtain less than 66 per cent of the total marks

The Honours Diploma is awarded to students who qualify as above and obtain 66 per cent or more of the total marks Students of second and third year who fail to qualify as above will neither be allowed to return to the College nor will they be awarded the Diploma in Civil Engineering as the case may be Should their failure, however, be due to prolonged absence through sickness or other circumstances beyond their control, such special cases will be considered and decided upon their merits

24 No student will be eligible for any College academic prizes unless he completes his course concurrently with the students who entered the College in the same year

25 Arrangements for giving practical training to Engineer students of the United Provinces upon completion of their course at the College will be made as far as possible in the United Provinces Public Works Department, Irrigation

and Buildings and Roads branches During the period of such practical training no allowances of any kind are now sanctioned

26 The list of the text books etc, used in the Civil Engineer classes of the College is given on page 96 The prices quoted are approximate

27 Drawing instruments, drawing boards, T-squares, etc, are procurable in the Bazar every student must provide himself with these at his own cost

28 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College

29 Students will not be permitted to appear for any external examinations during their College course

30 All students have to be in possession of the booklets of Standing Orders and Course of Study A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students therefore should not provide themselves with out of date copies

Any student requiring an extra copy of the Course of Study may obtain it on payment from the Assistant Superintendent Government Press, Roorkee Branch, Roorkee

B D PURI M A (CANTAB),

ROORKEE

October, 1939 *Principal, Thomason College*

APPENDICES

Forms required to accompany a candidate's application for admission to the Thomason College, Roorkee, are shown below:

(1) Statement showing age, education, etc., of candidate.
(2) Educational certificate.*
(3) Moral certificate.
(4) Medical certificate in the form shown further.
(5) A certificate of the recorded date of birth.
(6) Declaration as Statutory Native of India in case of other than pure Indians.
(7) Domicile certificate (only for U. P. students).

FORM No. 1.

Statement showing age, education, etc., of candidate.

Name of candidate	Date of birth	Province of domicile of the father, and if father not living, of guardian, where he must have definitely settled and resided for a period of three years, vide footnote on page 71	School or schools at which educated	Name, profession, situation, residence and caste of father, or if father not living of guardian show ing relationship of latter to candidate	Centre selected in case of candidates of U. P.	Remarks
1	2	3	4	5	6	7

I am willing to be vaccinated on admission.

(Place and date.) *(Signature.)*

* Copies properly certified by a Government gazetted officer only will be accepted.

FORM No 2

Copy of educational certificate to accompany application of candidate for admission to the Thomason College, Roorkee

---

Verified.

(Signature of any gazetted officer of Government.)

FORM No. 3

Moral certificate required from candidates for admission to the entrance examinations of Civil Engineer and Overseer Classes of the Thomason College, Roorkee.

Certified that ______________________________
bears a good moral character and has done so for the last two years.

Station ______________
Date ______________

(Signature and designation of Instructor under whom educated, or superior under whom employe1 brought roup.)

FORM No 4

Medical Certificate.

I certify that I have carefully examined————; that his eyesight is of the standard prescribed, that he is fairly robust, and his constitution is sound, and that he has no disease, or bodily or mental infirmity, unfitting him now, or likely to unfit him in the future, for active outdoor service in the Public Works Department*

N B —The above certificate must be signed, within two months before the [illegible]

---

* The standard prescribed is as follows :

1 If myopia in one or both eyes exists, a candidate may be passed, provided the emmetropia does not exceed 3 5D, and if, with correcting glasses not exceeding 3 5D the acuteness of vision in one eye equals [illegible] and in the other [illegible], there being normal range of accommodation with the glasses

2 Myopic astigmatism does not disqualify a candidate, provided the lens or the combined spherical and cylindrical lenses required to correct the error of refraction, does not exceed 3 5D, the acuteness of vision in one eye, when corrected being equal to [illegible] and in the other [illegible], together with normal range of accommodation with the correcting glasses, there being no evidence of progressive disease in the choroid or retina

3 A candidate having total hypermetropia not exceeding 4D is not disqualified provided the sight in one eye (when under the influence of atropine) equals [illegible] and in the other eye equals [illegible], with +4D glasses or any lower power.

4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction, do not exceed 4D, and that the sight of one eye equals [illegible] and the other [illegible], with or without such lens or lenses

5 A candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$. In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a candidate

6 A candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia).

7 Paralysis of one or more of the exterior muscles of the eyeball disqualifies a candidate for the service.

FORM No 5

University, College or School certificate of age required in case of candidates for the entrance examination of the Thomason College, Roorkee.

Certified that the date of birth of————————

————————————————————

son of————————————————

as entered in the records of the————————

———————————— * { University College School

18————————.

Signature of—

Place————

Date————

* { *Registrar,————University* | *Principal————College* | *Head Master,————School*.

* Two of these to be struck out

FORM No. 6

Form of declaration for Europeans or Anglo-Indians

I____

candidate for the entrance examination of the Thomason Civil Engineering College, do hereby declare that I am a "Statutory Native of India" within the meaning of paragraph 37, Chapter II of the Civil Service Regulations.

Date *(Signature of candidate.)*

Copy of paragraph 37, Chapter II, Civil Service Regulations, regarding Statutory Natives of India ·

"Native of India" means any person domiciled in India and born of parents habitually resident of India, and not established there for temporary purposes only.

FORM No. 7

Certificate of Nationality, Domicile and Residence

Certified that ——————————————————,

$\frac{\text{father}}{\text{legal guardian}}$ of——————————————————,

who is a candidate for the entrance examination to the $\frac{\text{Civil Engineer}}{\text{Overseer}}$ Class of the Thomason College of Civil Engineering, Roorkee, resides at————————district————————

(i) The father is (or, if dead, was at the time of his death) domiciled in the United Provinces.

(ii) The father being deceased the legal guardian is domiciled in the United Provinces.

Place————————

Date————————

District Magistrate.

District————————

Memorandum of Expenses of Students of the Civil Engineer Class.

THE following information is published for the guidance of parents and guardians, and for their assistance in determining the probable expenses of a course of instruction at the College Economical management is aided as far as possible by the College authorities

It must be clearly understood that students cannot be permitted to remain in the College if their dues* of any kind are not paid promptly on demand The probable expenses of a student while at the College are shown under three heads, viz the initial expenses at the beginning of each yearly term and the monthly current expenses and the final examination expenses All College dues must be paid before the 21st of the month to which they relate and any student in arrears on the first of each month will lose all marks for any examination that may occur between this date and that on which he clears his account Guardians are advised to send the above amounts direct to the Principal and, if convenient, the whole remittance intended for the student can thus be sent, and the balance will at once be made over to him

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* NOTE—The words "College dues" include—

(i) College fees

(ii) Rent and conservancy

(iii) Rent of College furniture

(iv) Electric current charges

(v) Recreation fund subscription and cost of articles purchased from recreation stores.

(vi) All dues in connexion with Engineer Class Club

(vii) All dues of College dairy, College shoe maker College shop-keeper, College tailor, College sweet-seller and College stores.

(viii) All dues in connexion with common Civil Engineer Class Mess

Details of Expenses

Each student upon first joining the College and at the commencement of each subsequent year has to incur certain non recurring expenses The details of these with appro ximate costs as far as it is possible to give them, are stated below Every student has to have certain text books of his own for the year s work These books are obtainable at the College Book Depot at prices 12½ per cent lower than publ shed prices The costs quoted take this into considera ion The li t of these books is given on page 96

N B —List and prices are liable to alteration Prices shown are all approximate

Details	Price	Remarks
Upon first jo ning	Rs a	
Box of drawing instruments		Prices too vari able to be quoted
T square 36″		
Set squares 45° and 60°		
Brushes and colours		
Two drawing boards (24″×36″ and 24″×18″)		
One ten inch sl de rule		
One case of architectural scales		
One case of engineer s and surveyor s scales		
One workshop tool set comprising		
1 steel L square		
1 steel rule 12″		
1 pair inside callipers		
1 pa r outside callipers		
1 pair of wing compas es		
Text books	94 13	
Level books each	1 4	
Survey Field Books each	0 12	
Surveynote books each	3 0	
Entrance fee		
C E Recreation Sports ana Gegatta	15 0	Obl gatory to join
C E Studentts Club	10 0	
C E Students Common Mess	2 0	Optional

Details	Price	Remarks
	Rs a	
Commencement of 2nd year		
1 Chesterman steel woven tape, 100 feet Text books say ..	59 11	
Commencement of 3rd year		
Text books, say	30 12	
At end of 3rd year		
Final examination fee	40 0	

Monthly expenses

(9 *months only*)

Items	Price	Remarks
	Rs a	
College fee	24 0	Fixed obligatory charges
Rent and conservancy	5 12	
Rent of College furniture	2 8	
Subscription C E Recreation Sports and Regatta	7 0	
Ditto Students Club	3 0	
College Magazine subscription	0 4	
Subscription C E Common Mess	1 0	Joining the Mess is optional
Vegetarian Messing	33 0	Those who do not join make their own arrangements
Non vegetarian Messing	40 0	
Electric light	3 0	Rs 5 if fan is used
Bearer, say	12 0	Approximate only
Bhisti say	2 0	
Dhobi say	3 0	
Sweeper say	2 0	

List of essential text-books

Particulars	Cost
Civil Engineer Class—I Year	Rs a
Structural Engineering'—Husband and Harby	10 12
"Elements of Co-ordinate Geometry —Loney	2 10
' Dynamics —Landon	5 8
' Statics —Puri B D	5 12
"Examples in Theory of Structures —Landon	3 8
Theory of Structures'—Morley	8 8
' *Hydraulics and its Application'—Gibson say*	*8 0*
' Roorkee Treatise on Surveying 'Part I	3 1
' Industrial Chemistry for Engineering Students —Henry K Benson PH D say	8 0
"Heat for Engineers —Darling	7 12
'Light —Stewart	4 6
"Electricity and Magnetism —Reynolds	3 4
Heat Engines —Low	10 0
' Theory of Machines —Mackay	13 12
Total	94 13
Civil Engineer Class—II Year	
' Roorkee Treatise on Earthwork	1 12
Roorkee Treatise on Bridges	7 0
M E S Handbook, Water Purification —Volume V	5 0
' Military Engineering (Volume V) Roads 1935 say	5 0
' Roorkee Treatise on Railways	5 1
' Roorkee Treatise on Surveying —Part II	2 10
' Callendar's Steam Tables	2 4
Moller's Diagrams	1 4
Applied Thermo dynamics —Robinson	10 12
Maccal's Continuous Current	9 8
Maccal's Alternating Current	9 8
Total	59 11
Civil Engineer Class—III Year	
' Sewers and Sewerage —Whyatt	1 12
Work of Sanitary Engineer —Martin	*10 0*
Elements of Reinforced Concrete Design —Adams	5 0
" Concrete Handbook —Hool and Johnson, say	7 0
' Handbook of the Code of Practice of Reinforced Concrete —Scott and Gravnille say	7 0
Total	30 12

The rules in this Circular are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR.]

THOMASON COLLEGE OF CIVIL ENGINEERING. ROORKEE.

These rules apply to admissions in 1940 and until further notice

OVERSEER CLASS

1 The Overseer Class has been constituted at the College to meet the requirements of the Subordinate Engineering Service of the Public Works Department of the United Provinces and of the public demands for a class of men trained as overseers

2 Candidates for admission to this class must not be under 16 or above 21 years of age on June 1, immediately preceding the entrance examination in which they wish to appear

Overage candidates are allowed to sit for the competitive entrance examination provided they are not over 25 years of age on June 1 immediately preceding the entrance examination, in which they wish to appear Should they qualify, they will be allowed to enter the College provided the number of candidates of the correct age who qualify, is less than the sanctioned strength of the class Such candidates will not be eligible for academic prizes or United Provinces Government scholarships

The name and age of a candidate will be taken from the original University records and for candidates who have not

appeared for a University examination, from College, or, failing a College, from school records No alterations in the records will be recognized except in the case of purely clerical errors Applications for the examination must be accompanied by a true copy of University, College or School registers, as the case may be, signed by the Registrar, Principal or Head Master, and under no circumstances will any alteration be accepted to the advantage of the candidate

3 The class is intended primarily for Europeans, Anglo Indians and Indians residents within the United Provinces excluding States within it Extra provincial candidates will be admitted only if vacancies remain after the admission of the United Provinces candidates An annual contribution is charged for extra provincial candidates This contribution is based on the actual expenditure of the preceding financial year and will be intimated by the Principal on inquiry being made to him Where a candidate is willing to bear this contribution himself the application for permission to appear in the admission examination may be submitted direct to the Principal otherwise it should be submitted through the Government of the Province or State in which the candidate resides The Government or State forwarding such an application should clearly state that in the event of the candidate obtaining in the examination a place which entitles him to admission the Government or State concerned will be willing to pay the above contribution The United Provinces Government may in special cases waive this contribution

NOTE 1 —To constitute residence in a particular province or state the parent or guardian of a candidate for admission to this College must have definitely settled and resided there for a period of three years

NOTE 2 —Since Government departments in the United Provinces demand a domicile certificate signed by the District Magistrate before overseers are appointed guardians are advised to furnish this certificate with the application This will obviate further correspondence and possible rejection of the application

4 Applications for admission should reach the Principal, **complete in all respects, not later than April 15, nor before February 1,** preceding the entrance examination accompanied by a statement of—

The date of birth of the candidate
The school or schools at which he has been educated
The profession situation relationship and residence of his father or guardian

N B —Great care should be taken to ensure that forms are complete in every respect Incomplete forms are liable to be rejected Forms of application with instruction showing how they should be filled in may be obtained on request from the Principal

5 Every candidate will be required to produce testimonials (copies properly certified by a Government gazetted officer will be accepted) which will not be returned of good moral conduct signed by the instructor under whom he has been educated or of some other superior under whom he may have been employed or brought up and these testimonials should have reference especially to his conduct during the two years immediately preceding his application for admission

6 The qualifying tests for admission to the entrance examination will be the High School examination conducted by the Board of Education United Provinces or the School Leaving Certificate examination of this province or the Matriculation examination of the Allahabad University (or equivalent examination of other provinces at present recognized by the Allahabad University for purposes of Matriculation) The Senior Cambridge examination or the High School Final

examination under the Code of Regulations for European schools in force in Bengal, Bombay and Madras Presidencies, the United Provinces, Punjab or Central Provinces will also be recognized Those candidates, who have appeared for any of the examinations, noted as the qualifying tests, before the date of the College entrance examination, but the results of which have not been published before the last date for submission of their applications to the Principal, are allowed to sit provisionally for the College entrance examination Such candidates must, however, furnish with their application forms a certificate signed by the Head of their school or College, stating that they have so appeared Their marks will be excluded from the result sheet if the information of their passing the qualifying tests are not communicated before the publication of the results of this College

7 In case of pupils of Government schools who have passed as "Teachers", certificates must be furnished that three years have elapsed since they left the Normal School, or they must furnish an order from the Inspector of Schools of their district authorizing their application to enter the College

8 An "examination' fee of Rs 10* must be forwarded by postal money order with the candidate's application, until this fee has been received by the Principal, the candidate's application will not be registered In no circum stances will this fee be refunded to the candidate

9 A medical certificate must be furnished in the form printed as a sample in the appendices, no other will be accepted

NOTE—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

* Cheques or crossed Postal Orders in payment of this fee will not be accepted The College Cashier will grant a receipt for fee paid in cash by the candidates at the counter, and this receipt must be attached to the application forms

10 The candidate must be acquainted with both the English language and the vernacular of Upper India, and able to speak, read and write them with tolerable ease and accuracy. He must pass an entrance examination in the following subjects, which will be held during the first week in June, at the following centres, viz, Roorkee, Agra, Lucknow, Allahabad and at any other centres, at the discretion of the Principal

SUBJECTS OF EXAMINATION AND MARKS

	Full marks	*Time allowed*
[illegible]	50	2½ hours
[illegible]	50	½ hour.
[illegible]	100	3 hours.
Algebra Fundamental laws and definitions The methods of addition, subtraction multiplication and division H C F, L C M., factors, fractions, and simple and elementary simultaneous equations	100	3 "
Geometry Euclid, Books I and II, and simple riders	100	3 "
Drawing Printing scales and simple geometrical figures (as in the Thomason College, Roorkee, Drawing Manual, Part I, Chapters I—IV)	100	3 "
Hindustani. Translation of extract in Hindi or Persian characters, from any easy Hindustani book and of easy English sentences into colloquial Hindustani, and grammatical questions	100	3 "
Total of Marks	600	

N B—One third of the marks in each subject and one half of the total marks are required for passing

11 The entrance examination is competitive, and those who stand highest on the list of passed candidates (only to the number of available vacancies, which is for the present fixed at 40), will be selected for admission to the College Provided the candidates pass the qualifying entrance examination, eight places will be reserved for Moslems and two for other minority communities Any candidate who, after being duly notified, fails to join the College on the day fix for the reopening of the session, or, who before that date

20 Upon successful completion of the course two classes of certificates are awarded as follows

I The Higher Certificate, awarded to students obtaining at least 50 per cent in each group and 60 per cent of the total marks

II The Ordinary Certificate awarded to students obtaining at least 33 per cent in each group and 50 per cent of the total marks

21 Every endeavour will be made to give unpaid practical training to all the United Provinces students but no guarantee in this respect can be given

22 *The list of the text books etc used in the class,* is given in the appendices The prices quoted are approximate Books are available at the Book Depot in the College

23 Drawing instruments drawing boards T squares etc are procurable in the bazar Every student must provide himself with these at his own cost

24 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College

25 It is desirable that every student should be able to swim before joining the College

26 Students will not be permitted to appear for any external examinations during their College course

27 All students have to be in possession of the booklets *of Standing Orders and Course of Study* A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students therefore should not provide themselves with out of date copies

Any student requiring an extra copy of the Course of Study may obtain it on payment from the Assistant Superintendent, Government Press, Roorkee Branch, Roorkee

ROORKEE B D PURI, M A (CANTAB),

July 31 1939 *Principal*

APPENDICES

Forms required to accompany a candidate's application for admission to the Thomason College, Roorkee, are obtainable from the Principal

(1) Statement showing age, education etc, of candidate

(2) Educational certificate *

(3) Moral certificate

(4) Medical certificate

(5) A certificate of the recorded date of birth

(6) Certificate of Nationality, domicile and residence

FORM No 1

Statement showing age, education, etc., of candidate.

Name	Date of birth	Province of domicile of the father, and if father not living of guardian, where he must have definitely settled, and resided for a period of three years *vide* footnote page 98	School or schools at which educated	Name, profession, residence of father or guardian showing relationship	Remark
1	2	3	4	5	6

I am willing to be vaccinated and in the case of European students inoculated as may be ordered on admission.

(*Signature.*)

(*Place and date*)

*Copies verified by a Government gazetted officer will be accepted.

FORM No. 2

Copy of Educational Certificate to accompany application of candidate for admission to the Thomason College, Roorkee

____

____

____

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____

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____

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____

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____

____

Verified.

Signature of any Gazetted Officer of Government

FORM No 3

Moral Certificate required from candidates for admission to the entrance examinations of Civil Engineer and Overseer Classes of th Thomason College Roorkee

Certified that____________________________________ bears a good moral character and has done so for the last two years

*Station*______________

*Date*_______________

Signature and designation of Instructor under whom educated, or superior under whom employed or brought up

FORM No 4

Medical Certificate

I certify that I have carefully examined——————, that his eyesight is of the standard prescribed, that he is fairly robust, and his constitution is sound, that he has no disease, or bodily or mental infirmity unfitting him now, or likely to unfit him in the future, for active outdoor service in the Public Works Department*

N B —The above certificate must be signed within a month before date of submission by a Commissioned Medical Officer or by a Medical Officer in charge of a civil stat on, and must include a description giving clearly the personal marks of identification of the candidate who has been medically examined No other certificate will be accepted, nor will applications be entertained unless the above rules be strictly complied with

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*The standard prescribed is as follows —

1 If myopia in one or both eyes exists a candidate may be passed provided the emmetropia does not exceed 3 5D, and if, w th correcting

eye when corrected being equal to [illegible] and in the other [illegible] together with normal range of accommodation with the correcting glasses there being

ding 4D is not
he influence of
glasses or any

lower power

4 Hype metropic astigmatism does disqualify provided the lens or combined lenses required to cover the error of refraction do not exceed 4D and that the sight of one eye equals [illegible] and the other [illegible] with or without

pal colours (achromatopsia)

7 Paralysis of one or more of the exterior muscles of the eyeball disqualifies a candidate for the service

FORM No 5

University, College or School Certificate of Age required in case of Candidates for the Entrance Examination of the Thomason College, Roorkee, U. P.

Certified that the date of birth of_______________ son of_______________ as entered in the records of the_______________ (a) {University, College, School,} is_______________

Signature of—

Place————— (a) {*Registrar,—————University,*
Date————— *Principal,—————College.*
Head Master,—————School}

(a) Two of these to be struck out

FORM No. 6

Certificate of Nationality, Domicile and residence

Certified that———————————————,
$\frac{\text{father}}{\text{legal guardian}}$ of———————————————,
who is a candidate for the entrance examination to the $\frac{\text{Civil Engineer}}{\text{Overseer}}$ Class of the Thomason College of Civil Engineering, Roorkee, resides at———————————
District———————————.

(i) The father is (or, if dead, was at the time of his death) domiciled in the United Provinces.

(ii) The father being deceased the legal guardian is domiciled in the United Provinces.

Place———— *District Magistrate,*

Date———— *District*————

Memorandum of the Expenses of Students of the Overseer Class.

The following information is published for the guidance of parents and guardians and for their assistance in determining the probable expenses of a course of instruction at the College

Economical management is aided as far as possible by the College authorities

It must be clearly understood that students cannot be permitted to remain in the College if their dues* of any kind are not paid promptly on demand

The probable expenses of a student while at the College are shown under two heads, viz, (i) the initial expenses of each yearly term, and (ii) the monthly current expenses

Details of Expenses

Each student upon first joining the College and at the commencement of the second year has to incur certain

*Note The words College dues include

(i) College fees

(ii) Rent and conservancy

(iii) Rent of College furniture

(iv) Electric current charges

(v) Recreation fund subscription and cost of articles purchased from [illegible]

(vi) All dues in connexion with Overseer Class Club

(vii) All dues of College Dairy College shoe-maker College shop keeper College tailor, College sweet seller and College stores

non recurring expenses The details of these with appro mate costs as far as it is possible to give them, are stated below Every student has to have certain text books of his own for each year s work These books are obtainable at the College Book Depot at prices 12½ per cent lower than published prices The costs quoted take this into considera tion The lists of these books are given on pages 115 116

Details	Price	Remarks
Upon first joining	Rs a	
Box of Drawing instruments		
T square 36		
Set squares 45° and 60°		
Brushes and colours		
Two drawing boards (24″×36″ and 24″×18″)		
One case of architectural scales		
One case of engineer s and surveyor s scales		Prices too variable to be given
One Chesterman steel woven tape 100 feet		
One workshop tool set comprising — 1 steel L square 1 steel rule 12″ 1 pair ins de callipers 1 pair outside callipers		
Text books say	49 9	
Level books each	1 4	
Survey field books each	0 12	
Survey note books each	3 0	
Entrance fee		
Overseer Class Club and recreation	3 0	
Commencement of second year		
Text books, say	52 0	

Monthly expenses

(9 *months only*)

Item	Price	Remarks
	Rs a	
College fee	6 0	Fixed obligatory charges
Rent	1 0	
Subscription Overseer Class Club, recreation and boating	5 0	
College magazine subscription	0 4	
Electric energy	3 0	If fan used, Rs 5.
Cook, say	1 8	Approximate only.
Servant say	1 8	
Dhobi, say	1 8	
Messing hire of furniture, etc		Whatever a student may make it

List of essential text-books

Particulars	Cost
	Rs a.
OVERSEER CLASS, I YEAR	
"Roorkee Treatise on Earthwork"	1 12
"Building Construction, Advanced Course,"—Mitchell ..	7 14
"Building Construction, Elementary Course,"—Mitchell	4 14
"Elementary Trigonometry"—Loney	3 1
"Elementary Mensuration"—Pierpoint Part I Re 1 12 and Parts II and III Rs 2 2	3 14
"Elements of Statics and Dynamics"—Loney ..	6 8
"Roorkee Treatise on Surveying"—Part I	3 1
"Roorkee Treatise on Drawing"—Part I	3 1
"Heat Engines"—Low	10 0
"Class Book of Physics"—Gregory and Hadley, Parts III, IV and V (1 volume) Parts VI, VII and VIII (1 volume) at Rs 2 each	4 0
"Logarithmic Table"—College Manual	1 8
Total ..	49 9

List of essential text books—(concluded)

Particulars	Cost Rs a
OVERSEER CLASS II YEAR	
* Building Mechanics —Sheppard	5 8
Military Engineering (Volume V) Roads 1935 say	5 0
* Roorkee Treatise on Railways	5 1
Roorkee Treatise on Bridges	7 0
Roorkee Treatise on Irrigation —Volume I	4 6
* Sewers and Sewerage —Whyatt	1 12
Electrical Wiring and Fittings —Maycock	6 0
U P Irrigation Technical Paper no 1 (Design of Channels) —G Lacey	0 14
Roorkee Treatise on Estimating	6 9
Elementary Hydraulics for Technical students F C Lea	4 14
* Military Engineering (Part V)—Water Supply	5 (
Total	52 0

The rules in this Circular which have been approved by Government in letter No G XVIII—30(4S), dated February 21, 1933, are liable to revision without notice in view of possible changes in the Course of Study, orders of Government, etc.

[CIRCULAR.]

THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

1939

These rules apply to admissions in 1940 *and until further notice*

DRAFTSMAN CLASS

1 For admission to the Draftsman Class an entrance examination will be held annually at the Thomason College during the first week of June Applications for admission must be submitted to the Principal not later than April 15, nor before February 1 preceding The subjects for the examination will be (1) Arithmetic, (2) English (3) the preparation of simple drawing scales and italic printing, and (4) Geometry and very simple Mensuration The maximum marks for each subject are 100 The standard in these subjects (except Drawing) will be that of the School Promotion Examination, Class VIII The first ten on the list of passed candidates will be selected annually for admission to the Draftsman Class No entrance fee will be charged for the examination Indians of pure Asiat

descent whose domicile* s the United Provinces excluding States within the United Provinces are only eligible for admission to the class One third of the marks in each subject and one half of the total marks are required for passing

2 The minimum qualifying test for permission to appear for the entrance examination *will be the School Promotion Examination in Class VIII of an Anglo Vernacular School* Candidates must submit a certificate signed by the Head Master of the school in which they have been educated, showing that they possess the minimum educational qualifications and are of good character industrious and have an aptitude for Drawing

3 All candidates must furnish a certificate of sound health and physical fitness in the form a sample of which is given in the appendices No other form will be accepted

NOTE—The fee prescribed by Government for this examination is Rs 4 which must be paid by the candidate direct to the Civil Surgeon or the Commissioned Medical Officer prior to the examination

4 Forms of application for admission samples of which are given in the appendices may be obtained on request from the Principal

5 The entrance examination will take place at the same time as the entrance examinations for other classes in the College and accepted candidates should present themselves for the entrance examination on the date which will be notified to them all are required to be present on that date otherwise they will forfeit the right of admission Their admission will depend on the results of the examination and they should join the class on October 16 or on the date notified to them

* NOTE—To constitute residence in a particular province or state the parent or guardian of a candidate for admission to the Thomason College Roorkee must have definitely settled and resided there for a period of three years

6 Full discretion rests with the Principal to remove any student who appears to be unlikely to profit by the training A removal under this rule will imply no reflection on the student s character

7 The College session for the Draftsman Class commences on October 16 each year or thereabouts and ends on July 15 in the following year

8 Candidates will pay no fees and will be provided with free quarters, if available, but no member of a candidate's family will be allowed to reside in them with him

9 No stipends will be given, but not more than twelve scholarships of Rs 4 per mensem are available and shall be awarded to the top four students in each session of the Draftsman Class who are eligible and are of United Provinces domicile and that if there be any session's class in which the number of United Provinces eligible students is less than four the unawarded scholarships shall lapse to Government No scholarship will be payable while a student is on leave or during the vacation

10 Instruments and materials will be supplied free for the use of students, but remain the property of the College, and all work turned out during working hours will also be the property of the College

11 On completion of the course of training, students will be granted a certificate as "Draftsman," with "qualified in Simple Estimating," in the case of those students only who attain the requisite standard in the subject The course of training for the Draftsman Class will extend over three years, but any candidate who gains admission and in the opinion of the Principal, is initially a good draftsman, may be allowed to join the second year class The College does not undertake to find employment for successful students, though it v

give all the assistance it can Certificate holders are expected to find employment for themselves in the open market

12 Any student who is expelled from the College for misconduct will not be allowed to appear in any examination conducted by the College

13 All students have to be in possession of the booklets of Standing Orders and Course of Study A plea of ignorance for the breach of any of the former is not accepted A copy of each of these booklets will be issued to each new student on arrival and the cost recovered in his first bill Students therefore should not provide themselves with out-of-date copies

ROORKEE B D PURI M A (CANTAB),
The 31*st July* 1939 *Principal*

APPENDICES.

Forms required to accompany a candidate's application for admission are obtainable on application to the Principal

(1) Statement showing age, education, etc , of candidate

(2) Certificate of character and education, etc (*vide* paragraph 2)

(3) Birth certificate or affidavit

(4) Medical certificate (*vide* paragraph 3)

(5) Domicile certificate

FORM No 1

Statement showing age, education, etc , of candidate.

Name of candidate	Date of birth as furnished to the school	Province of domicile of the father and if father not living of guardian where he must have definitely settled and resided for a period of three years vide footnote page 118	School at which educated	Name, profession, situation or residence and caste of father or if *father not living* of guardian showing relationship of latter to candidate	Remarks
1	2	3	4	5	6

I am willing to be vaccinated on admission

(Place and date) *(Signature of candidate)*

(Signature of Head Master of S

FORM No. 2

Moral Certificate required from candidates for admission to the Entrance Examination of Draftsman Class of the Thomason College, Roorkee

Certified that____ bears a good moral character has passed the School promotion Examination of Class VIII of an Anglo Vernacular School, is industrious and has an aptitude for Drawing

(Signature of Head Master of School in which educated)

STATION____________________

*Date*____________________

FORM No 3

University, College or School Certificate of age required in case of Candidates for the Entrance Examination of the Thomason College Roorkee United Provinces

Certified that the date of birth of ________________
________________________________ son of
____

as entered in the records of the ________________
________________________ (a) { University / College / School }

is ________

Signature of—

(a) { *Registrar* ____________, *University*, / *Principal*, ____________ *College*, / *Head Master*, ____________ *School* }

Place

Date

(a) Two of these to be struck out

FORM No 4

Medical Certificate

I certify that I have carefully examined——————, that his eyesight is of the standard prescribed,* that he is fairly robust, his constitution is sound, and that he has no disease, or bodily or mental infirmity unfitting him now, or likely to unfit him in the future for active outdoor service in the Public Works Department

N B—The above certificate must be signed, within a month before date of submission, by a Commissioned Medical Officer or by a Medical Officer in charge of a civil station, and must include a description, giving clearly the personal marks of identification of the candidate, who has been medically examined No other certificate will be accepted

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* The standard prescribed is as follows

1 If myopia in one or both eyes exists, a candidate may be passed, provided the emmetropia does not exceed 3 5D, and if, with correcting glasses not exceeding 3 5D the acuteness of vision in one eye equals $\frac{6}{6}$ and in the other $\frac{6}{9}$, there being normal range of accommodation with the glasses

2 Myopic astigmatism does not disqualify a candidate, provided the lens or combined spherical and cylindrical lenses required to correct the error of refraction, do not exceed 3 5D, the acuteness of vision in one eye, when corrected, being equal to $\frac{6}{9}$ and in the other $\frac{6}{9}$, together with normal range of accommodation with the correcting glasses there being no evidence of progressive disease in the choroid or retina

3 A candidate having total hypermetropia not exceeding 4D is not disqualified, provided the sight in one eye when under the influence of atropine equals $\frac{6}{6}$ and in the other eye equals $\frac{6}{9}$, with +4D glasses or any lower power

4 Hypermetropic astigmatism does not disqualify, provided the lens or combined lenses required to cover the error of refraction do not exceed 4D and that the sight of one eye equals $\frac{6}{6}$ and the other $\frac{6}{9}$ with or without such lens or lenses

5 A candidate having a defect of vision arising from nebula of the cornea is disqualified if the sight of one eye be less than $\frac{6}{12}$ In such a case the better eye must be emmetropic Defects of vision arising from pathological or other changes in the deeper structures of either eye, which are not referred to in these rules, may exclude a candidate

6 A candidate is disqualified if he be unable to distinguish the principal colours (achromatopsia)

7 Paralysis of one or more of the exterior muscles of the eye ball disqualifies a candidate for the service

COURSE OF STUDY AND SYLLABUS

CIVIL ENGINEER CLASS, 1939-40

The chief points kept in view in arranging this course of study are to ensure the necessity for steady work throughout the whole course and to co ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for a Civil Engineer of as high a grade as a college training can produce, special attention being paid to the local conditions of India This test is represented by the Project and the Final Examinations

Four tenths of the total marks at the end of the 1st year are carried forward in each group to the 2nd year Similarly seven tenths of the total marks at the end of the 2nd year are carried forward to the 3rd year Continuous steady work is necessary to ensure qualification at the end of each year

TERMS AND EXAMINATIONS

First Term—

College Attendances —From October 16 to a variable date in February

Mid Sessional Examinations —For 1st and 3rd year C E students start on the 1st or 2nd Monday in February, which ever falls nearest to February 7 or as may be arranged For 2nd year C E students these examinations start three weeks before the examinations of 1st and 3rd year C E students

Second Term—

College Attendances —Start on the Monday following the Mid Sessional Examinations and continue till about the first Saturday in June

Revision in Quarters —During Entrance Examinations

Final Examination —Start in the last week of March

COURSE OF STUDY AND SYLLABUS

CIVIL ENGINEER CLASS, 1939-40

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Second Term—

College Attendances—Start on the Monday following the Mid Sessional Examinations and continue till about the first Saturday in June

Revision in Quarters—During Entrance Examinations

Final Examinations—Start in the last week of March

The Course of Study extends over three years and comprises the following subjects grouped under seven heads —

Group	I	Civil Engineering
„	II	Pure and Applied Mathematics
„	III	Surveying and Drawing
„	IV	Applied Science
„	V	Mechanical and Electrical Engineering
„	VI	Projects
„	VII	Physique and General Fitness

The marks each student has to obtain to qualify for admission to the second and third year, and to obtain the College Diploma in Civil Engineering, awarded upon completion of his third year are as follows

(a) For admission to the second year, the first year students are required to obtain 33 per cent of the marks allotted to each Group and 50 per cent of the total marks Those who fail to qualify as above will be given one more chance for admission by repeating the first year class Such students will not be eligible to compete for the United Provinces Government Scholarships or academic prizes

(b) To return to the College at the end of the second year the students are required to obtain 33 per cent of the marks allotted to each Group, in that year (i e in the second year), and 50 per cent of the total marks for the two years, i e of the full marks for the second year together with the reduced marks of the first year

(c) To pass out of the College at the end of the third year, the students are required to obtain 33 per cent of the marks allotted to each Group, in that year (i e the third year), and 50 per cent of the total marks for the three years i e of the full

marks for the third year together with the reduced marks for the first and second years

(*d*) The ordinary Diploma is awarded to students who qualify as above and obtain less than 66 per cent. of the total marks

The Honours Diploma is awarded to students who qualify as above and obtain 66 per cent or more of the total marks Students of second and third year who fail to qualify as above will neither be allowed to return to the College nor will they be awarded the Diploma in Civil Engineering as the case may be Should their failure, however, be due to prolonged absence through sickness or other circumstances beyond their control such special cases will be considered and decided upon their merits "

The Examinations, the marks assigned to them, and the Time-tables are shown on the following pages.

EXAMINATION AND MARKS

(First Year)

Theoretical

	1st half session	Marks		*2nd half session*	Marks
1	Calculus and Analytical Geometry	100	1	Applied Mechanics I	100
2	Graphical Statics	100	2	Elementary Engineering	100
3	Mechanics	100	3	General Mathematics	100
4	Applied Mechanics	100	4	Calculus	100
5	Survey Theory	100	5	Analytical Geometry	100
6	Physics	100	6	Mechanics	100
7	Theoretical Chemistry	100	7	Applied Mechanics II	100
8	Mechanical Engineering	100	8	Drawing	100
			9	Physics	100
			10	Theoretical Chemistry	100
			11	Mechanical Engineering	100
		800			1 100

Practical and Class Work

1	Class Work—Mathematics	100	1	Mathematical Note books	100
2	Survey Practical	100	2	Class Work—Mathematics	100
3	Class Work—Physics	50	3	Drawing	200
4	Practical Chemistry	100	4	Practical Physics	150
5	Mechanics Laboratory	100	5	Class Work—Physics	50
			6	Practical Chemistry	100
			7	Class Work—Chemistry	100
			8	Mechanical Engineering	100
		450			900
		1 250			2 000

Totals

	Marks
1st Term	1 250
2nd "	2 000
Grand Total	3 250

EXAMINATION AND MARKS.

(Second Year.)

THEORETICAL.

1st half session

		Marks
1	†Buildings	100
2.	Calculus and Differential Equations	100
3.	Applied Mechanics	100
4.	Hydraulics	100
5.	Electrical Engineering	100
6.	Applied Chemistry	100
7.	Mechanical Engineering	100
8.	Descriptive Engineering	100
		800

2nd half session.

		Marks.
1.	*Civil Engineering I	100
2	*Civil Engineering II	100
3	*Civil Engineering III	100
4	Estimating	100
5	Calculus and Differential Equations	100
6.	Applied Mechanics	100
7	Electrical Engineering	100
8	Geology and Mineralogy	100
9	Mechanical Engineering	100
10.	Survey Theory	100
		1,000

PRACTICAL AND CLASS WORK.

1.	Field Engineering	100
2.	Class Work—Mathematics,	100
3.	Survey	250
4.	Class Work—Electrical Engineering	50
5.	Mechanical Engineering Design	200
		700
		1 500

1	Engineering Note books and Class Work	50
2	Mathematical Note books	100
3	Class Work—Mathematics	100
4	Civil Engineering Design	250
5	Practical Electrical Engineering	100
6	Class Work—Electrical Engineering	100
7	Class Work—Chemistry and Mineralogy	100
8	Mechanical Engineering	100
		900
		1,900

TOTALS

	Marks
1st year, carried forward, (4/10 of 3 250) ..	1 300
2nd ,, ...	3 400
GRAND TOTAL ..	4 700

†Theory of Structures (Buildings).

*Theory of Structures (Buildings and Bridges). II Hydraulic Engineering. III. General Civil Engineering.

EXAMINATION AND MARKS

(Third Year.)

THEORETICAL.

1st half session.	Marks.	2nd half session.	Marks
1. *C. E. I, Buildings ..	100	1. *C. E. I, Buildings ..	100
2. C. E. II, Irrigation ..	100	2. C. E. II, Irrigation ..	100
3. C. E. III, Reinforced Concrete ..	100	3. C. E. III, Reinforced Concrete ..	100
4. Sanitary Engineering ..	100	4. Bridges ..	100
5. Estimating	100	5. Water-supply and Sanitary Engineering ..	100
6. Curves, Alignments and Hydro-Electric Surveys	100	6. Survey I	100
7. Astronomy	100	7. „ II	100
8. Electrical Engineering ..	100	8. Mechanical Engineering ..	100
9. Mechanical Engineering ..	100	9. Electrical Engineering ..	100
	900		900

PRACTICAL AND CLASS WORK.

1. Survey	100	1. Mechanical Engineering ..	100
2. Civil Engineering Design ..	250	2. Process Work ..	100
3. Class Work—Electrical Engineering ..	100		
	450		200
	1,350		1,100

TOTALS.

	Marks.
1st and 2nd years' Marks (7/10 of 4,700) ..	3,290
3rd year's Marks	2,450
Projects	1,250
Physique and General Fitness..	800
GRAND TOTAL ..	7,790

* Theory of Structures (Buildings).

TIME-TABLES

TIME-TABLES

1st term

		Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st Year		8-9 9-10 10-11 11-12 12-1 1-2 2-3	Mech Eng Lec Chemistry Chemistry Appd Mechs Lec Recess Drawing Drawing	Physics Lec Physics Lab Physics Lab Mech Lec Recess Survey Survey	Mathematics Lec Appd Mechs Lec Appd Mechs Tut Chemistry Lec Recess Drawing Drawing	Chemistry Lab Chemistry Lab Mathematics Tut Mech Eng Lec Recess Survey Survey	Appd Mechs Lec Mechanics Tut Mechanics Tut Physics Lec Recess Drawing Drawing	Mechanics Lab Mechanics Lab Workshops Workshops
2nd Year	*Survey camp from Saturday, January 20 1940 to Saturday February 10, 1940	8-9 9-10 10-11 11-12 12-1 1-2 2-3	Appd Mechs Lec Mathematics Lec Civil Eng Elect Eng Lec Recess Elect Eng Lab Elect Eng Lab	Mathematics Tut Mathematics Tut Appd Mechs Lec Mech Eng Lec Recess Mech Eng Lab Mech Eng Lab	Survey Survey Survey Survey	Elect Eng Lec Appd Mechs Lec Civil Eng Civil Eng Recess Appd Mechs Tut Appd Mechs Tut	Mech Eng Lec Mech Eng Tut Chemistry Lec Mathematics Lec Recess Mech Eng Des Mech Eng Des.	Survey Survey Survey Survey
3rd Year	* Astron my 4 hours per week in evenings	8-9 9-10 10-11 11-12 12-1 1-2 2-3	Civil Eng Civil Eng. Civil Eng Recess Estimating Estimating	Civil Eng Civil Eng Survey Survey Recess Civil Eng Civil Eng	Elect Eng Lec. Civil Eng Civil Eng Civil Eng	Mech Eng Lec Civil Eng Civil Eng Civil Eng Recess Mech Eng Lab Mech Eng Lab	Civil Eng Civil Eng Civil Eng Recess Survey Survey	Elect Eng Lec Mech Eng. Lec Elect Eng Lab Elect Eng Lab

Mid-sessional examinations 1st year start Monday February 5 1940
Mid sessional examinations 2nd and 3rd years start Monday January 15 1940

TIME-TABLES

2nd term

		Hour	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st Year	*Classes until after sessional examinations on Mondays, Wednesdays and Fridays all drawing in College and other days in workshops.	8-9	Mathematics Lec	Appd Mech Lec	Drawing Lec	Mechanics Lec	Appd Maths Lec	Mathematics Lec
		9-10	Mathematics Tut	Chemistry Lec	Drawing Tut	Civil Eng Lec	Chemistry Lec	Mechanics Tut
		10-11	Physics Lec	Mech Eng Lec	Drawing Tut	Mech Eng Lec	Physics Lec	Appd Mech Lec
		11-12	Recess	Recess	R[illegible]	Recess	Recess	Recess
		12-1	Physics Lab	Drawing Tut	Mech Eng Des	Drawing Tut	Chemical Lab	Workshops
		1-2	Physics Lab	Drawing Tut	Mech Eng Des	Drawing Tut	Chemical Lab	Workshops
		2-3	*Survey	*Survey			*Survey	
		3-4						
2nd Year before Sessional Examinations.		8-9	Mech Eng Lec	Elect Eng Lec	Mathematics Lec	Mech Eng Lec	Elect Eng Lab	Elec Eng Lec
		9-10	Civil Eng Lec	Estimating	Geo and Min Lec	Civil Eng Lec	Elec Eng Lab	Mech Eng Lec
		10-11	Appd Mech Lec	Geo and Min Lec	Geo and Min Lab	Civil Eng Lec	Estimating	Civil Eng Lec
		11-12	Recess	Recess	R[illegible]	Recess	Recess	Recess
		12-1	Civil Eng Des	Civil Eng Lec	Civil Eng Des	Civil Eng Des	Civil Eng	Mech Eng Lab
		1-2	Civil Eng Des	*Appd Mech Tut	Civil Eng Des	Civil Eng Des	Civil Eng	Mech Eng Lab
		2-3						
		3-4						
2nd Year after Sessional Examinations.		8-9	Elect Eng Lec	Survey Lec	Elect Eng	Survey Lec	Elect Eng Tut	Civil Eng
		9-10	Mathematics Lec	Survey Lec	Civil Eng Des	Survey Lec	Elect Eng Tut	Civil Eng
		10-11	Mathematics Tut	Mathematics	Civil Eng Des	Mathematics Lec	Mathematics	Civil Eng
		11-12	Recess	Recess.	Recess.	Recess.	Recess.	Recess.
		12-1	Civil Eng Des	Architecture	Civil Eng	Architecture	Civil Eng Des	Civil Eng
		1-2	Civil Eng Des	Architecture	Civil Eng	Architecture	Civil Eng Des	Civil Eng
		2-3	..					
		3-4					..	
3rd Year after Project.		8-9		Workshops.		Workshops	..	Process Work
		9-10	Elect Eng	Workshops.		Workshops	Elect Eng	Process Work
		10-11	Civil Eng	Workshops.	Elect Eng	Workshops	Civil Eng	Process Work
		11-12	Recess	Recess.	Recess.	Recess	Recess.	Recess
		12-1	Civil Eng		Civil Eng		Process Work	Process Work.
		1-2	Civil Eng.	.	Civil Eng	.	Process Work.	Process Work.
		2-3	..	.	.	.		.
		3-4	.	.	..	..	..	.

Group I.—CIVIL ENGINEERING.

BUILDING MATERIALS.*

(1st year 2nd half session)

Stone.—Selection Characteristics Classification and varieties Quarrying Blasting Dressing Implements

Bricks and Tiles —Classes of bricks and their distinguishing qualities Moulding Drying and stacking Brick-burning Types of kilns Firebricks Terra-cotta Tile manufacture

Cements, Limes and Mortars —Use of mortar Natural and artificial cements Varieties of limes Hydraulicity Burning Clamps Kilns Plaster Whitewash Distemper. Concrete Portland cement

Timber.—Growth of trees Felling trees Classification and properties of Indian and other woods Most suitable woods for particular purposes

CARPENTRY.*

(1st year 2nd half session)

Elementary carpentry as applied to Civil Engineering

MASONRY.†

(2nd year, 1st half session)

Stone Masonry —Ashlar of various sorts Block in-course Bond Dressing stone Rubble masonry Safe loads Lewis Dowel Joggle Cramp Template. *Bedding Moisture Precautions against settlement.* Rakingback Corbel Lintel Jamb Reveal Sill. Coping Masonry arches

* Included in the paper on Elementary Engineering

† Included in the paper on Descriptive Engineering

Brick Masonry.—Types and their uses. Bond Closers. Bedding. Moisture. Precautions against settlement. Raking back. Coping Cornice. Blocking course. Parapet. Eaves course. Corbel Lintel Jamb. Reveal. Sill. Drip course. Pisé walling *Dhajji* walling. Hollow masonry. Reinforced brick work Brick arches and Stone arches.

Miscellaneous.—Retaining walls Depths of foundations. Counterforts and buttresses Revetments Construction and sinking of masonry wells Simple masonry dams. Technical names of various parts Scaffolding Shears Derrick. Gyn Gantry Plastering Pointing Concrete arches.

EARTHWORK.*

(2nd year, 1st half session.)

Definitions Contracts Stability and properties of soils Measurement and Setting-out Instruments used. Sections and volumes Drainage Puddling Consolidation Dressing and turfing Rates Lift and lead

FIELD ENGINEERING.

(2nd year, 1st half session.)

Use of Spars.—Various knots and lashings and the suitability of each to certain circumstances Coiling and handling of ropes Blocks and tackle Reeving of blocks. Use of handspikes and rollers Holdfasts. Guys Use and construction of derricks, shears, gyns, and trestles in placing girders or columns in position in buildings or for other similar works.

Ground Tracing.—General principles (Masonry Manual). Working plans for foundations on level ground and on slopes. Trenches with vertical and with sloping sides Laying-out buildings on the ground and similar practical instruction

*Included in the paper on Descriptive Engineering

THEORY OF STRUCTURES (BUILDINGS).*

(2nd year, 1st half session)

Roofs.—Consideration of materials used in the construction of roof trusses Steel and timber Determination of stresses in trusses by various methods Dead loads and wind pressures Factors of safety and working stresses Design of roof trusses Various types of roof trusses and roof coverings, collar beam and hammer beam trusses

Columns and struts.—Use of Euler's Gordon's, Rankine's Fidler's, Johnson's and straight line formulae in the design of struts Buckling factor of struts, curves showing comparative strength of struts obtained by various formulae *Choice of sizes of sections Finish of steel work Joints* Design of end bearings Methods of fixing and supporting ends Specifications

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(2nd year 2nd half session)†

Stresses.—Application of circle and ellipse of stress and Clapeyron's theorem to design of structures

Cast Iron Columns and Steel Stanchions—Flange and web connections to steel stanchions caps bases transverse bracing of columns etc

Foundations—Safe pressures Foundations for columns Slab cantilever and grillage foundations Wells Piles

Retaining Walls and Earth pressures.—Rankine's theory Wedge theory, with corrections Bligh's graphical construction Design of various types of retaining walls in masonry

Tall Masonry and Steel Chimney.—Theory and design with reference to a particular example

Steel and Masonry Reservoirs—Theory and design

* Included in the paper on Buildings
† Included in the paper on Civil Engineering, I

Fire-proof construction.—Various methods.

Reinforced Concrete.—Elementary theory of construction of simple beams, columns and slabs.

Reinforced Brick work.—Design of beams, floors and walls.

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*(3rd year, 1st half session.)**

Stresses.—Deflection of framed structures and determination of stresses in redundant frames. Thomson's principles of similar structures as regards their strength, stability, deflections, etc

Influence line diagram.—Influence line diagrams for bending moment and shear for uniformly distributed and irregular loads on trusses, built in beams and three-pinned, parabolic, semielliptic and semicircular arches.

Design.—Dome design. Building design. Consideration of loads on buildings. Steel work Girders. Design of a residential bungalow with special reference to selection of site, construction of walls, damp-proof courses, water-supply, drainage and ventilation.

THEORY OF STRUCTURES (BRIDGES).

(2nd year, 2nd half session.)

Preliminary.—Selection of site. Determination of discharges of rivers from considerations of catchment areas, intensity of rainfall and by zoning Waterway to be provided. Depth of scour.

Foundation design.—Box, crate, well, pile, continuous masonry or reinforced concrete slab. Piers, ordinary and abutment. Floors and curtain walls.

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* Included in the paper, Civil Engineering I, Buildings.

Superstructure.—Determination by graphical and analytical methods of bending moments due to moving loads Wind pressures

Design.—Masonry bridges and culverts Plate and web girders Warren and lattice girders Three pinned arches, doubly pinned and rigid Suspension, cantilever, and tubular bridges Steel arched bridges Swing bridges

REINFORCED CONCRETE

(3rd year, 1st half session)

General —Nature, uses, properties, advantages and disadvantages of Reinforced Concrete over other types of constructions Assumptions made in theory of stresses in Reinforced Concrete beams

Theory and Design —Simple beams, T beams and slabs for different conditions of loading Shear bond and diagonal tension, and their nature and evaluation Location of reinforcement Doubly reinforced beams continuous beams columns, piles, slab foundations Simple cantilever and counterfort types of retaining walls Equivalent moments of inertia for Reinforced Concrete sections Theory of elastic deflections and outline of investigation of stresses in Reinforced Concrete arches

ESTIMATING

(2nd year 2nd half session)

Taking off.—Rules for taking off quantities in earthwork masonry, flooring, wood work mouldings arches groyned roofs domes, steel work, and plumber's work

Abstracting —Calculation of quantities of materials required to be furnished for the completion of work

Rates.—Rates and their analysis. Rates for carriage of materials by different means of transport.

Specifications.—Detailed and General.

Contracts.—Preparation. Contract law.

(3rd year, 1st half session.)

Examples.—Writing specifications, taking off quantities, abstracting and billing of various designs.

HYDRAULICS (ENGINEERING).

(2nd year, 2nd half session.)

Irrigation.—General theory of the flow of water Stream line motion Bernoulli's theorem and its application to the venturi meter Flow of water in open channels Chezy, Bazin, Manning and Kutter formulae Application to design of canals and distributaries Silt transportation formulae and their application to design of regime channels. Theory of scour as applied to rivers Flow of water through syphons. Falls, free and drowned Notches on falls Water cushions. Afflux and back water curves Methods of gauging discharges. Modules and semimodules Hydraulics and hydrostatics of weirs and dams Standing waves Flood absorption formulae

Power.—Utilization of water as a source of power Mills. Hydrautomats Hydraulics of power plants from source to delivery to turbine

***Water Supply.**—Rational and empirical formulae for the* flow of water through pipes Limiting, mean and critical velocities Distribution of velocity in pipes and relation between diameter and discharge Economical diameter of pipe lines Initiation and stoppage of motion in a pipe Water hammer and surge chambers Hydraulic gradient Losses on

straight pipes and at bends, elbows and tees Time of discharge through long pipe lines, branch mains and multiple supply Flow through bye pass and pipes coupled in parallel Flow through terminal nozzles Meters syphons Pitot tubes, Pitometers pumps and rams Calculation of compensation water Principles of experiments on models Dynamical similarity and dimensional homogeneity

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GENERAL CIVIL ENGINEERING.

(2nd year, 2nd half session)

Irrigation—Definition of irrigation Conditions necessitating its introduction Principal Indian crops their seasons, and benefits derived from irrigation Depth of water required to ensure maturity Wells as a source of irrigation Lined and unlined wells Sub soil water reservoirs Duty of wells Area irrigable from a well Canals as a source of irrigation Perennial canals Duty of canal water Depths and running days Supplies utilized and lost Silt and its effect on irrigation channels its prevention Kennedy channels Designs of channels from Garrett's diagrams Evaporation absorption and percolation Rise in the sub soil water level Water logging Lining of Canals Special features of inundation canals when necessitated General description location of off take to avoid silting

Water Supply—Sources of supply Springs well rivers and lakes Selection of a suitable source Special features of tube wells Reservoirs Impounded reservoirs storage and service Water towers Water works Intake settling tanks filters rates of filtration various types of mechanical filtration, sterilisation of water Conveyance and distribution Pipes Fittings and appurtenances losses

head, service tanks, waste prevention and meters, cisterns, etc. General types of pumping installations used in India

Roads.—History, survey, alignment, formation, foundations Hill roads, plains roads, earth roads, bridle paths, gradients curves banking on curves, camber, drainage, various types of wearing surfaces, concrete roads, footpaths, dust prevention, traffic, traffic census, collection, consolidation, maintenance, motor transport, types of bridges and culverts

Railways.—Land required Earthwork Road crossings Grades and ruling gradients Permanent way and ballast, materials used and functions of permanent way Points and crossings Maintenance of permanent way Plate laying Super elevation Station requirements Light railways Mountain railways Tunnelling

Miscellaneous.—Piles and pile driving Sheet, screw and interlocking piling Diving operations reclamations and dredging

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IRRIGATION.

(3rd year, 1st half session)

Perennial Canals —Sources of supply River discharges General description of Indian rivers Location and design of headworks in boulder trough and delta stages of a river Hydraulics and hydrostatics of headworks Weirs and under sluices Head regulators Supply channels Afflux bunds Temporary diversion bunds Permanent weirs Various types of same Drop shutters Automatic gates Stoney sluice gates

Design and Alignment of Canals.—Attainment of water shed Falls Bridges Regulators Locks Escapes. Roads Distributaries and minors, their design and running Outlets

Cross Drainage Works —Maximum rate of run off from catchments Inlets Super passages Level crossings Aqueducts Syphons Reservoirs

Tanks and Reservoirs —Tanks Flank escapes Outlet sluices Total run off from catchments Reservoirs for storage of water Earthen dams Masonry dams theory of their stability and design Open weirs Dams with discharge sluices Syphon dams Escapes Flood absorptive capacity of reservoirs

River Training Works —Spurs Groynes Bell bunds Stream line bunds Mattresses Aprons

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SANITARY ENGINEERING

(3rd year)

Sanitation —Ideal sites for various types of buildings and their orientation Damp proof courses Air space per person for various classes of building Heights of living rooms Ventilation requirements and humidity Sanitary fittings Drainage pipes Special junction pieces Disconnecting and intercepting traps Gully silt and grease traps Absorption pits Conservancy and water borne systems of domestic sewage Dr Poore s system for country houses Sanitation of special types for building such as infectious diseases hospitals meat markets abbato rs cremator a etc Drain testing

Sewerage and Drainage —Separate and combined systems Hydraulics of egg shaped circular and other special shape sewers Sewer cross sections capacity inclination and velocity in sewers Run off from paved and unpaved areas Calculation of storm water Storm water over flows Sewage lifts and ejectors Manholes lamp eyes flushing eyes and tumbling bays Sewer flushing and cleansing Testing

sewers Pail depots Water flushed latrines and urinals and conservancy latrines for public purposes Land and under-drainage The principles and practice of the design of sewerage and drainage systems in India Rules for the preparation of India drainage projects Construction of sewers Use of sight rails boning rods and templates General lay out Under pinning and shoring Various kinds of pipe Materials used in drainage and sewerage works

Sewage Disposal —Chemistry of sewage, its classification, composition and testing Preliminary processes Selection of sites for sewage disposal work Detritus and grit chambers Screens Essentials in the treatment of sewage Disposal by dilution and by land treatment Simple sedimentation chemical precipitation and bacterial tanks Septic tanks Contact beds and percolating filters Dortmund and Imhoff tanks Hydrolytic tanks Activated sludge system British Ministry of Health requirements and their adaptation to Indian conditions Sewage distributors Sprinklers jets and sprays Sterilisation of effluents Special features in the design and construction of sewage disposal works for Indian villages towns and cities Sewage pumping installation Dilution drying lagooning and burial of sludge

Disposal of Refuse —Collection of refuse destructors and incinerators

Specifications —Specifications for the construction of sanitary works

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CIVIL ENGINEERING DESIGN AND VISITS TO WORKS

(2nd and 3rd years)

This course is intended to supplement the lectures in Theory of Structures General Engineering Irrigation and

Reinforced Concrete The student will be required to design a number of structures under professional supervision and guidance

The course will include the design of masonry buildings, masonry and steel bridges, reinforced concrete bridges and buildings, retaining walls, masonry dams and aqueducts

In addition to the designs, the students will be shown important and instructive works under the supervision of Members of the Staff, who will explain the details of the works visited The students will then write notes on the works visited and submit them in proper note books

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PROCESS WORK.

(3rd year)

Apparatus.—General description of materials required, where these may be procured and approximate estimate of their cost

Working Room —How an ordinary room may be made suitable for Ferrotype work

Paper.—Qualities desirable in paper

Tracings —Tracing cloth and tracing paper Essential points to be observed in the preparation and preservation of tracings Suitable inks Effects of colour washes on resulting ferrotype prints

Chemicals.—Chemicals required with formulae for mixing Precautions to be observed in storing

Printing.—Explanation of the action of light on iron salts The Ferro prussiate and Ferro gallic printing processes How paper negatives may be made with silver salts from which positive prints, ferro prussiate or silver may be made

Developing, intensifying, reducing trimming and removal of defects Methods of making additions of lines figures, etc , by chemical or other means

Practical Course.—A tracing to be prepared specially for reproduction work by each student Three copies of Ferro-gallic and three copies of Ferrotype, from the tracing, to be submitted on papers which are sensitized and of which all the manipulations are to be carried out by the student himself Three copies in each of the above named processes to be submitted, prepared from commercial ready-sensitized papers, all other manipulations being carried out by the student.

Group II. PURE AND APPLIED MATHEMATICS.

GENERAL MATHEMATICS.

(Including Arithmetic Algebra, Geometry, Trigonometry and Mensuration)

No lectures will be provided in these subjects which are included in the syllabus of the entrance examination. However, students will be examined on that syllabus supplemented by the following :—

Theory and practice of the slide rule

MATHEMATICS.*

During the whole session two lectures and one tutorial period weekly

ANALYTICAL GEOMETRY

(1st year)

No lectures will be provided for the portion of the subject included in the syllabus of the entrance examination However, students will be examined on that syllabus supplemented by the following course —

Plane Geometry.—The Straight Line Law Elementary treatment of hyperbola logarithmic curve, circular curves, cycloid, epicycloid Witch of Agnesi and cissoid Further properties of the conic sections and the reduction of the general equation of the second degree

Solid Geometry.—Representation of a point Direction cosines, etc Geometry of the Plane and the Straight

*Stress is laid on graphical methods

Line. Surfaces of revolution and notions of developable surfaces. Elementary treatment of sphere, right circular cone and cylinder, ellipsoid, paraboloid and hyperboloid of one sheet.

CALCULUS.

(1st year.)

Differential calculus.—Infinitesimals and limits, definition of function, continuous functions, their properties and geometrical representation. Graphs of elementary and some simple function Limiting value of a function; special limiting values.

Derived functions. Geometrical and physical illustrations. *Standard forms, rules for differentiation, inverse circular* functions and their derivatives. Successive differentiation. Applications of a derivative. Differentials and application to correction of small errors, sign of the derivative. Mean value theorem, etc Maxima and minima values of a function of a single variable. Geometrical applications of the derivative, tangents and normals, polar co-ordinates, points of inflection, curvature, curve tracing.

Integral calculus.—Integration as inverse of differentiation. Standard forms. Rules for integration. Integration by substitution and integration by parts. Integration by reduction. Integration as the limit of a sum. Problem of areas, connec*tion with inverse differentiation. Definite integrals and their* properties.

Applications.—Quadrature and rectification of curves. Surfaces and volumes of solids of revolution. Centres of gravity. Theorem of Pappus and Guldinus. Moments of inertia.

CALCULUS.

(2nd year)

During the first half session two lectures and two tutorial periods weekly, during second half session, one period weekly.

Further applications.—Partial differentiation. Differentiation of implicit functions Total differentiation and application to small errors Planimetric applications Intrinsic equation of a curve Catenary problems Approximate integration and Simpson's rule

Differential Equations.—Formation Equations of the first order and first degree Special cases. Integrating factor. Linear differential equations of the first order with constant co efficients, Clairaut's form

Geometrical, physical and engineering problems including vibrations, etc. Linear equations with constant co-efficients. Particular integrals and their determination in simple cases. Applications to maxima and minima Elementary Fourrier's series

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MECHANICS.

No lectures will be provided for the portion of the subject included in the syllabus of the entrance examination However, students will be examined on that syllabus supplemented by the following course —

(1st year)

During the first half session, two periods in the laboratory, one lecture and two tutorial periods weekly; during second half session, one lecture and one tutorial period weekly

Graphic Statics.—Representation and composition, etc of forces Funicular polygon and its applications, conditions of equilibrium Graphical determination of ...

in frames Effect of wind loads Method of sections Displacement and Mohr's rotation diagrams

Dynamics.—Relative velocity, tangential and normal accelerations D'Alemberts principle Angular momentum and related problems, motion about a fixed axis, compound pendulum

Hydrostatics—Fluid pressure on surfaces in contact Centre of pressure Laws of flotation and metacentre Simple machines depending on fluid pressure and elementary notions about fluids in motion leading up to Bernoulli's theorem

Mechanical Laboratory.—The majority of the experiments here will be made by the students themselves in accordance with written instructions issued to them The objects of the experiments are to accustom the students to the use of accurate measuring instruments to illustrate the principles of elementary mechanics to verify the laws of motion, impact, friction and proportionality of stress and strain, to determine elastic constants for different materials, moments of inertia centres of gravity, co-efficients of velocity, contraction and discharge for different orifices in hydraulics, and to illustrate the use of section paper in plotting experimental results for the reduction of empirical formulae

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APPLIED MECHANICS

(*1st year*)

During the whole session two lectures and one tutorial period weekly

Theory of Structures—Analysis of stress and strain Relation between elastic constants Torsion of circular shafts Combined stresses Working stresses in a structural member and determination of its dimensions Elastic limit and ultimate strength Stresses due to repetition of applied loads and

due to dynamically applied loads Bending moment and shearing force diagrams for beams and cantilevers due to dead loads only, relation between bending moment and shearing force diagrams Euler s theory of bending of beams fibre stresses, modulus of section, moment of resistance distribution of shear stress and principal stresses in a beam

*Analysis of combined and conjugate stresses Rankine's theory of earth pressure depths of foundations and strength of footings Coulomb s theory of earth pressure, Neville Rebahnn's modification Application of the princip'e of virtual work to deflections in framed structures and to finding stresses in frames with one redundant member

Hydraulics —Hydro kinetics uniform and steady flow, stream line and turbulent motion Bernoulli s theorem

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APPLIED MECHANICS

(*2nd year*)

During the first half session three lectures and two tutorial periods weekly, during the second half session one lecture weekly and two tutorial periods weekly till the end of March

Theory of structures—Bending moment and shearing force diagrams for live loads Analysis of uniform and uniform'y varying stresses Stresses due to eccentric loads Stresses in chimneys and masonry dams Line of resistance Stability of masonry structures Stresses in riveted joints and in boiler shells Bending of struts due to direct and eccentric loads Rankine's, Gordon's and other formulae Deflections of simply supported, fixed and continuous beams Clapeyron's theorem of three moments Flexible chains Theory of elastic arches Masonry arches

* Treated graphically generally

Hydraulics.—Discharge through orifices and mouth-pieces, and over notches Discharge when the head varies Laws of fluid friction Head lost due to friction, sudden enlargement and contraction and other causes Channel cross-sections of greatest efficiency Diameters of pipes for maximum kinetic energy of jets

Group III. SURVEY AND DRAWING.

SURVEY.

(*1st year 1st half session*)

The Level—The use and adjustment of the level. Different types of levels and their constructional details Different types of levelling staves and their markings Their relative merits Precautions in using levels Level Field books of different kinds Booking and reduction of levels Comparative merits of reduction methods Definition of terms used in levelling Sources of error Curvature and refraction Longitudinal sections and their plotting Allowable closing error

Chain Surveying—Equipment Ranging and chaining line Errors in chaining Customary limits of error Reconnaissance Selection of stations Keeping of the field book Obstacles which obstruct chaining but not ranging Obstacles which obstruct ranging but not chaining Obstacles which obstruct ranging and chaining Plotting the survey

(Students will carry out and plot an actual chain survey in the field)

Compass Surveying—The prismatic compass construction details and its uses Bearings and angles Magnetic and true meridian Variation Designation of bearings Comparative merits of whole circle and quadrantal reckoning Back bearings Application of compass surveying Local attraction Elimination of effects Sources of error L of precision Adjustment of closing error

SURVEY.

(2nd year, 1st half session.)

The Theodolite —The use and adjustment of the theodolite Parts for horizontal measurement Part for vertical measurement Details of the theodolite Measurement of angles Repeating angle Requirements of the theodolite Conditions established by adjustment Errors in non adjustable parts Elimination of these errors

Traversing and its Computations —Definition of a traverse Gale's traverse system Conditions fulfilled in a closed traverse Calculation and tabulation of co-ordinate Closing error and its adjustment Advantages of plotting by co-ordinates Omitted measurements and their calculations

Plane-tabling —Equipment Advantages and disadvantages of plane tabling Maxims for plane tabling Order of working Methods of plane-tabling Fixing of position Traversing with the plane table Theory and use of tacheometric plane table Engineering contouring Use of tangent clinometer for contouring

(Students will carry out an actual theodolite traverse in the field and fill in the details of the area with the plane table) .

(A three weeks survey camp is held where students undergo instruction in Triangulation and each student independently fills in details and contours the area triangulated with the plane table)

Triangulation —Grades of triangulation Length of base lines Connection of base line to triangulation Selection of stations Reconnaissance Signals Base line measurements Forms of base measuring apparatus Observing angle Zero station Setting to Zero Change of Zero Cautions to be observed in taking a round of angles Conditions favourable for observation Recording observations Intersected points *Vertical angles for heights Computation of side* Spherical excess Computation of heights single and reciprocal values

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DRAWING

(1st year, 1st and 2nd terms.)

The course has been arranged to carry the student step by step in the technique of drawing as a preparation for a course in engineering design and survey mapping.

Drawings will be made of building construction details, culverts, railway and road plans, etc. In addition drawings will be made from actual measurements taken of existing buildings. Projections and sections of solids.

NOTE.—All drawin[illegible] must be done in College during drawing periods and the dates of [illegible] are [illegible] with the student's name and order of [illegible] [illegible] ten on each plate.

Group IV. APPLIED SCIENCE.

INORGANIC CHEMISTRY.

(1st year)

Two lectures weekly throughout the session The syllabus is specially arranged for engineering students

Physical —Mass action, solution, diffusion, dissociation, properties of colloids and Periodic Law

Non-Metal —Natural waters, the chemical composition, analysis and suitability for various purposes Coal and its distillation products and their uses Decay in timber and methods used for preventing decay

Metal —A study of important metals and their more important compounds Quick lime, hydraulic lime, cements, their chemical composition and preparation, the setting and hardening of mortar and cements Preparation of glass, soluble glass porcelain, pottery and bricks Metallurgical terms, ores, fuel, refractory materials furnaces, the production of pig iron and wrought iron, a brief description of the more important methods of steel manufacture, the chemical composition of pig iron wrought iron, and steel, the effect of impurities and corrosion of iron and steel Preservation of structural materials

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PRACTICAL CHEMISTRY.

(1st year)

Two afternoons [illegible] k during [illegible] half session, and one afte[illegible] g the [illegible] f session

The practical work in the chemical laboratory will cover the general principles of qualitative analysis and elementary quantitative analysis The engineer is not expected to be able to carry out the chemical analyses he requires but he should be able to understand and able also to interpret intelligently the reports received from an analytical chemist The practical course in chemistry has therefore been drawn up with this object in view

APPLIED CHEMISTRY.

(2nd year)

One lecture a week during the first half session

General—A short description of the properties of the rarer metals employed in the production of certain kinds of steel and steel alloys cooling curves metallography The properties and composition of non ferrous alloys, i e gun metal phosphor bronze, brass, solder, etc Paints and varnishes preparation and use of the common pigments etc Petroleum its origin and refining bitumen, asphalt etc, their composition uses and tests Tar products and their uses

PHYSICS

(1st year)

Two lectures and two practical periods a week, during the whole session

General—Commercial and some special methods of measuring density Transmission of pressure in fluids and its application to hydraulic press and transmission of power

for industrial purposes Aneroid and Fortin barometers with their characteristic errors and uses Pressure and vacuum pumps monometers and pressure gauges Hooke s law and its applications

Heat —High and low temperature measurement Practical applications of the expansion of solids, liquids and gases by heat Absolute zero Vapour pressure Methods of measuring storage pressure Flash point Determination of height by hypsometer Total heat of steam, superheated steam, methods of measuring dryness of steam Heat transmission methods of measuring heat insulating properties of non-conductors Ventilation of buildings Newton's and Stefan's laws of cooling Determination of loss of heat from a surface by radiation Elementary discussion of the principles of thermo dynamics, ideal heat engine cycles, principles of refrigeration, entropy Calorific value of fuels

Light —Optical properties and applications of parabolic and cylindrical mirrors, cylindrical and prismatic lenses and totally reflecting prisms Spherical and chromatic aberration, defects in images due to these and methods of minimising the defects Dispersion and spectrum analysis The study of the sextant, telescope, microscope, rangefinders and eye pieces, (Huyghen, Ramsden and terrestrial) Polarisation with simple applications

Sound.—Accoustic properties of buildings and prevention of echoes Elementary discussion of vibrations

Electricity and Magnetism —Electrostatic unit of quantity, potential, capacity, condenser, energy of a condenser, quadrant electrometer, production and propagation of electric waves, principles of wireless transmission and reception, description of a wireless receiving set, measurement of potential difference current and resistance by potentiometer. Back electromotive force in electrolysis, secondary cells, el .

mechanical and heat units of energy electro-magnetism and instruments, electro magnetic induction, magnetisation, permeability and its measurement, hysteresis

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MINERALOGY AND GEOLOGY.

(2nd year)

Two lectures and one practical period a week during the 2nd half session

N B —In March and April one lecture period a week is to be given over to Civil Engineering Department

Mineralogy.—Crystal form and symmetry, division into systems with their principal characteristics, classification based upon (*a*) chemical composition, (*b*) physical properties, *e g*, specific gravity, hardness cleavage, fracture and phenomena relating to light Simple description and identification of rock-*forming minerals, ores, veinstones salts and gems*

Geology—Elementary discussion of the geological agents, their influence in effecting geological changes and the records left by them Simple description of the principles of structural geology Sedimentary and igneous rocks Use of fossils Elementary discussion of the general principles of historical geology, including a brief description of the geological record of the history of the earth with a short discussion of the chief characteristics of the following divisions —

1 Archæan
2 Palæozoic
3 Mesozoic
4 Tertiary.
5 Post Tertiary

A short description of the stratigraphical geology of India

Practical Course—The object of the practical work is to enable the student to identify the more common ores, salts and rock forming materials by the application of simple physical and chemical tests

Group V.—MECHANICAL AND ELECTRICAL ENGINEERING.

DESCRIPTIVE ENGINEERING

(1st year)

One lecture and one tutorial period a week during the 1st half session

One lecture a week during 2nd half session

Boilers—Cornish Lancashire locomotive, vertical and water tube boilers Boiler details Safety valves check valves Feed pumps Superheaters Feed water heaters Oil separators Boiler room instruments

Engines—Modern, high and slow speed steam engines Types of gas and oil engines Steam turbines Engine details General arrangement of a power house Auxiliary machinery

Hydraulics—Plunger centrifugal and turbine pumps Pelton wheel inward and outward flow turbines

Machine Tools—General description of lathes, drilling shaping and milling machines Arrangement of shafting and belting in a machine shop

THEORY OF MACHINES.

(1st year, 2nd half session)

One lecture a week during 2nd half session

Kinematics—Kinematic chains Relative motion Point paths Angular velocity Instantaneous centre Transmission of motion by belts Speed cones Fast and loose pulleys Belt-driving between non parallel shafts Friction rollers and toothed wheels Pitch surfaces and lines
matic conditions to be satisfied by profiles of teeth

and cycloidal teeth Trains of wheels Epicyclic trains Reversing mechanisms using toothed wheels

Workshop Course —Two attendances per week throughout first year Practical work in Carpenter s, Fitting and Machine Shops Use of modern building tools and materials

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THEORY OF MACHINES

(2nd year)

One lecture a week throughout the session

Kinematics —Conversion of reciprocating into rotary motion The slider crank chain Mechanism of a shaping machine Quick return motion Friction Laws of friction as depending on velocity and pressure Friction of greased surfaces Friction of belts on pulleys Transmission of power by belts and ropes Slipper and band brakes Dynamometers

Dynamics of Reciprocating Engines —Piston acceleration and velocity diagrams Angular velocity of connecting rod Forces due to inertia of reciprocating parts Crank effort diagram Fluctuation of energy Function of fly-wheels Function of a governor Simple pendulum and loaded governors Effect of friction on governors Governor effect and power

Valve Gears —Simple slide valve Valve diagrams Independent cut off gears Reversing gears and link motions Radial gears Piston valves Corliss and other trip gears Elementary treatment of balancing problems

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BEHAVIOUR OF MATERIALS UNDER STRESS.

(2nd year)

One lecture a week throughout 2nd term

Elastic limit and yield point Ductile strain Ultimate strength Measure of ductility Effect of shape of test pieces

Resilience Effect of overstrain on elastic limit Hardening and annealing Compression test Live loads Resistance to shock Fluctuating stresses Fatigue and effect of dynamic loading Factor of safety Combined stresses Hardness tests

HEAT ENGINES.

(2nd year)

One lecture a week throughout the session

Thermo dynamics.—Work done by an expanding fluid Adiabatic and isothermal expansion and compression Entropy Air compressors and motors Ideal heat engines Thermal efficiency Carnot constant volume and constant pressure cycles Combustion Evaporation Laws of heat transmission Stationary boilers Gas producers Steam engines Action of steam in cylinders Effect of initial pressure and expansion on economy Governing Steam jacketing and superheating

Internal Combustion Engines.—Principles of working Effect of compression Strength of mixture Speed Point of ignition Description of gas and oil engines

Refrigerating Machinery.—Principles of working Choice of working substance Comparison of results from different machines

HEAT ENGINES.

(3rd year)

One lecture per week for first half session

Steam Turbines—Flow of steam through orifices and nozzles Impact of steam on vanes Classification of steam turbines Determination of vane angles St consumption Effect of vacuum, super-heat and initial Governing of steam turbines

Hydraulic Machinery —Revision of hydraulics and hydrostatics Impact of water on fixed and moving vanes Turbines impulse and reaction Description of different types of turbines Determination of vane angles Efficiencies of turbine plant Governing Reciprocating centrifugal and turbine pumps

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MECHANICAL ENGINEERING DESIGN

(1st and 2nd years)

Design of bolts cotters riveted joints, shafting, couplings bearings pulleys spur and bevel gearing profiles of teeth and cam profiles

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ENGINEERING LABORATORY.

Two hours per week throughout 2nd year and 1st term of 3rd year

Material Testing —Tests to destruction of specimens of cast iron wrought iron steel and various alloys in tension compression bending and torsion Elastic tests of various materials Microscopic examination of metals Effect of heat treatment Riveted joints Shafts and couplings Tests of cements concrete bricks and stones

Thermo-Dynamic Laboratory.—Determination of latent heat of steam Calorific values of liquid, solid and gaseous fuels Use of indicator Tests of steam and internal combustion engines steam turbines boilers and condensers Gas analysis

Hydraulic Laboratory.—Flow of water through orifices and nozzles Flow over weirs Flow through pipes Effect of bends elbows and changes of sections of pipes Testing ines and centrifugal pumps

ELECTRICAL ENGINEERING.

(2nd year)

Two lectures and two practical periods each week throughout the second year

General—Electric and magnetic circuits conductivity and insulation of materials measuring instruments direct current principle of alternating currents in single two and three phase circuits

Electric Machinery—Description principles of working and maintenance characteristics of direct current and alternating current generators and motors, including parallel working

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ELECTRICAL ENGINEERING.

(3rd year)

Two lectures a week and three lectures a week after civil engineering project

General.—The course treats of the transmission and distribution of electrical energy and the following points will be considered in detail —

(a) Transmission of energy, high and low tension systems advantages of the 3 phase system, voltage drop and power factor posts and insulators and erection of mains, underground and overhead systems contrasted

(b) Distribution of electrical energy, arrangement for a public supply and the use of feeders

(c) Transformers, construction action, working and efficiency, rotary converters and motor generators

(d) Rectification mercury and valve rectifiers

Hydraulic Machinery.—Revision of hydraulics and hydrostatics Impact of water on fixed and moving vanes Turbines, impulse and reaction Description of different types of turbines Determination of vane angles Efficiencies of turbine plant Governing Reciprocating, centrifugal and turbine pumps

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MECHANICAL ENGINEERING DESIGN

(1st and 2nd years)

Design of bolts cotters riveted joints, shafting, couplings bearings pulleys, spur and bevel gearing, profiles of teeth and cam profiles

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ENGINEERING LABORATORY.

Two hours per week throughout 2nd year and 1st term of 3rd year

Material Testing.—Tests to destruction of specimens of cast iron, wrought iron steel and various alloys in tension, compression bending and torsion Elastic tests of various materials Microscopic examination of metals Effect of heat treatment. Riveted joints Shafts and couplings Tests of cements, concrete, bricks and stones

Thermo-Dynamic Laboratory.—Determination of latent heat of steam Calorific values of liquid, solid and gaseous fuels Use of indicator Tests of steam and internal combustion engines, steam turbines, boilers and condensers Gas analysis

Hydraulic Laboratory.—Flow of water through orifices and nozzles Flow over weirs Flow through pipes Effect of bends, elbows and changes of sections of pipes Testing turbines and centrifugal pumps

ELECTRICAL ENGINEERING.

(2nd year)

Two lectures and two practical periods each week throughout the second year

General.—Electric and magnetic circuits, conductivity and insulation of materials, measuring instruments, direct current principle of alternating currents in single, two and three phase circuits

Electric Machinery.—Description, principles of working and maintenance characteristics of direct current and alternating current generators and motors, including parallel working

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ELECTRICAL ENGINEERING.

(3rd year)

Two lectures a week and three lectures a week after civil engineering project

General.—The course treats of the transmission and distribution of electrical energy and the following points will be considered in detail —

(*a*) Transmission of energy, high and low tension systems advantages of the 3 phase system, voltage drop and power factor posts and insulators and erection of mains, underground and overhead systems contrasted

(*b*) Distribution of electrical energy, arrangement for a public supply and the use of feeders

(*c*) Transformers, construction, action, working and efficiency, rotary converters and motor generators

(*d*) Rectification, mercury and valve rectifiers

(e) Switch gear as applied in modern power stations protection, boosters, balancers and accumulators.

(f) Lighting, systems of wiring, accessories, distribution and fuse boards, wiring circuits, wiring rules, *incandescent lamps and heating appliances, and* estimating.

Note—A comprehensive course of practical work will be undertaken during the laboratory periods.

Group VI. PROJECTS.

The projects will consist of the preparation of detailed designs and estimates for various engineering schemes There will be one or more minor projects, which will be examined by internal examiners and a major project which will be set and examined by an outside examiner The maximum marks allotted to the minor project or projects are 450 and to the major 800, making a total of 1,250 in this Group

Group VII. PHYSIQUE AND GENERAL FITNESS.

General Fitness includes discipline, punctuality, general conduct and ability to control labour, etc , throughout the three years' course Over 10 per cent of the total marks for the whole three years course are allotted to this group and the total marks therefore constitute a very fair and true record of the student's intellectual and physical fitness for the work of an Engineer

The sub heads and the marks allotted are —

Members of the I F I and U T C are marked for Military Proficiency The full marks are	150
Athletics—Proficiency in games and sports	250
General Fitness—Physical and moral fitness for work in the engineering profession	400
Total	800

Athletics —The 250 marks for proficiency in games and sports will be allotted as follows —

Spirit of sport	100
Swimming	30
Athletic sports	30
Games (1) Boating (2) Tennis and Squash Racquets, (3) Football (4) Hockey and (5) Cricket Any three will carry 90 marks	90
Total ..	250

COURSE OF STUDY AND SYLLABUS

OVERSEER CLASS

1939-40 *and till further notice*

The chief points kept in view in arranging this Course of Study are to ensure the necessity for steady work throughout the whole course and to co-ordinate the instruction given in each subject so as to lead up to a thorough test of the qualifications necessary for an overseer in the Public Works Department of as high a grade as a College training can produce, special attention being paid to the local conditions of India. This test is represented by the Project and the Final Examinations. Of the marks obtained in the first year 50 per cent are carried on to the second year so that continuous steady work is necessary for ultimate success.

Terms and Examinations

FIRST TERM—

College Attendances—From October 16 to a variable date in February.

Mid Sessional Examinations—Start on the 1st or 2nd Monday in February whichever falls nearest to February 7 or as may be arranged.

SECOND TERM—

College Attendances—Start on the Monday following the Mid Sessional Examinations and continue till about the 1st Saturday in June.

Revision in Quarters—During Entrance Examinations.

Final Examinations—Start in the last week of April.

The Course of Study extends over two years, and comprises the following subjects grouped under eight heads, to which the following numerical values are assigned —

		Marks
Group	I—Civil Engineering	1 075
,,	II—Pure and Applied Mathematics	700
,,	III—Surveying	550
,,	IV—Drawing	275
,,	V—Mechanical and Electrical Engineering	450
,	VI—General	100
,,	VII—Project and Design	450
,,	VIII—Physique and general fitness	400
	Total	4,000

The marks required at the end of the second year for certificates are as follows —

I —To obtain the Higher Certificate as Overseer the *minimum pass marks of 50 per cent* in each group and 60 per cent in the total must be obtained

II —To obtain an ordinary Certificate (required for all Overseers) the minimum pass marks of 33 per cent in each group and 50 per cent in the total must be obtained

For admission to the 2nd year a student has to obtain at least 33 per cent of the marks allotted to each group and 50 per cent of the grand total

A student who fails to attain the standard prescribed for the 1st year course will be given one more chance to repeat his studies at the College in the first year course Such a student will not be eligible to compete for the United Provinces Government scholarships or academic prizes

Should the failure in the 2nd year be however due to prolonged absence through sickness or other circumstances beyond the student's control such cases will be considered and decided upon their merits

The examinations the marks assigned to them and the Time tables are shown on the following pages

EXAMINATIONS AND MARKS

First Year

THEORETICAL

First term	Marks	*Second term*	Marks
1 Building Materials	100	1 Civil Engineering I (Building Materials Earth work and Carpentry)	100
2 Building Construction (Carpentry)	100	2 Civil Engineering II (Masonry and Building Construction)	100
3 Earthwork	100	3 Elementary Mathematics	100
4 Trigonometry	100	4 Mechanics	100
5 Mensuration and Geometry	100	5 Surveying	100
6 Mechanics	100	6 Physical Science	100
		7 Mechanical Engineering	100
	600		700

PRACTICAL AND CLASS WORK

1. Levels in the field	100	1 Engineering Note books	50
		2 Mathematics and Mechanics Tutorial	100
		3 Surveys in field	100
		4 Drawing Course	100
		5 Drawing Examination	50
		6 Workshops	100
	100		600
	700		1 300

TOTALS

	Marks
First term	700
Second term	1 300
GRAND TOTAL	2 000
Carried forward 50 per cent	1,000

EXAMINATIONS AND MARKS.

Second Year.

THEORETICAL.

First term

		Marks.
1.	Roads and bridges	100
2.	Estimating	100
3.	Surveying	100
4	Hydrostatics and Hydraulics	100
5.	Applied Mechanics	100
6	Elementary Electrical Engineering	100
7.	Mechanical Engineering	100
		700

Second term.

		Marks.
1.	Civil Engineering I (Building Construction)	100
2	Civil Engineering II (Bridges and Railways)	100
3	Civil Engineering III (Sanitary Engineering and Water supply)	100
4	Civil Engineering IV (Irrigation)	100
5.	Estimating	100
6.	Surveying	100
7.	Applied Mechanics	100
8	Mechanical Engineering	100
		800

PRACTICAL AND CLASS WORK

1.	Field Engineering	50
2.	Survey Course	200
		25[illegible]

1	Engineering Note books	50
2	Drawing Course	100
3	Drawing Examinations	50
4.	Process work	50
5	Applied Mechanics Tutorial	100
6	Civil Engineering Design	150
7	Project	300
8	Workshops	50
9.	General Fitness	400
		1,2[illegible]0

TOTALS

	Marks.
First term	950
Second term	2,050
	3,000
Add First Year's marks	1,000
GRAND TOTAL	4,000

TIME-TABLES.

TIME TABLE

	Hour	First term					
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st year	8 9	Civil Eng	Mech Eng	Mathematics	Mechanics	Survey	Mathematics
	9 10	Mathematics	Drawing	Civil Eng	Drawing	Survey	Mathematics
	10 11	Civil Eng	Drawing	Physics	Drawing	Survey	Mechanics
	11 12	Civil Eng	Drawing	Civil Eng	Drawing	Civil Eng	Mechanics
	12 1	Recess	Recess	Recess	Recess	Recess	
	1 2	Survey	Workshops	Civil Eng	Workshops	*Physics Lab	
	2 3	Survey	Workshops	Civil Eng	Workshops	*Physics Lab	
					(*) Alternate weeks Mechanics Lab		
2nd year	8 9	Civil Eng	Survey	Applied Mech.	Survey	Survey	Elect Eng
	9 10	Civil Eng	Survey	Applied Mech	Survey	Survey	Estimating
	10 11	Drawing	Survey	Drawing	Survey	Survey	Civil Eng
	11 12	Drawing	Survey	Drawing	Survey	Survey	Civil Eng
	12 1	Recess	Recess	Recess	Recess	Recess	
	1 2	Estimating	Applied Mech	Mech Eng	Mechanics	Workshops	
	2 3	Estimating	Civil Eng	Elect Eng	Civil Eng	Workshops	

Mid sessional Examinations 1st and 2nd year start Monday, February 5, 1910

	Hour	Second term					
		Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1st year	8 9	Survey	Drawing	Mech Engrg	Mechanics	Drawing	Survey
	9 10	Survey	Drawing	Mathematics	Drawing	Drawing	Survey
	10 11	Civil Engrg *	Mathematics	Mathematics	Drawing	Drawing	Survey
	11 12	Recess	Recess	Recess	Recess	Recess	Recess
	12 1	Workshops	Physical Science	Drawing	Civil Engrg *	Mechanics	Physical Science
	1 2	Workshops	Civil Engrg *	Drawing	Civil Engrg *	Mechanics	Civil Engrg *
	2 3	Workshops					
2nd year	8 9	Drawing	Civil Engrg *	Civil Engrg *	Survey	Civil Engrg *	Drawing
	9 10	Drawing	Applied Mech	Civil Engrg *	Survey	Applied Mech	Drawing
	10 11	Drawing	Civil Engrg *	Mech Engrg	Civil Engrg *	Civil Engrg *	Drawing
	11 12	Recess	Recess	Recess	Recess	Recess	Recess
	12 1	Estimating	C E Design	Applied Mech	Estimating	Workshops	C E Design
	1 2	Estimating	C E Design	Applied Mech	Estimating	Workshops	C E Design
	2 3					Workshops	

N.B—Design periods will be under general supervision of P C E (1) and immediate supervision and assistance of the Head master

*Periods marked will be taken under the supervision of P C E (2)

The 2nd Year Project will commence about the 4th May and will continue to about the end of 1st week of June

The 1st Year Drawing Courses will be submitted on the Saturday previous to the Entrance Examinations in June

The 2nd year Drawing Course will be submitted on the last Drawing period before the Project

Process Work will be taken up after the Final Examinations in the 2nd Term of the 1st year in the afternoon periods only

GROUP I.—CIVIL ENGINEERING

BUILDING MATERIALS*

(1st year, 1st half session)

Stone.—Selection Characteristics Classification and varieties Quarrying Blasting Dressing Implements

Bricks and Tiles—Classes of bricks and their distinguishing qualities Moulding Drying and stacking Brick burning Types of kilns Firebricks Terra-cotta Tile manufacture

Cements, Limes and Mortars.—Use of mortar Natural and artificial cements Varieties of limes Hydraulicity Burning Clamps Plaster Whitewash Distemper. Concrete Portland cement

Timber.—Growth of trees Felling trees Classification and properties of Indian and other woods Most suitable woods for particular purposes

CARPENTRY*

(1st year 1st half session)

Elementary Carpentry as applied to Civil Engineering

MASONRY*

(1st year, 2nd half session)

Stone Masonry.—Ashlar of various sorts Block in-course Bond Dressing stone Rubble masonry Safe loads Lewis Dowel Joggle Cramp Template Bedding Moisture Precautions against settlement Raking back Corbel Lintel Jamb Reveal Sill Coping

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* See time tables on pages 177 and 178

Brick Masonry.—Types and their uses Bond Closers Bedding Moisture Precautions against settlement Raking back Coping Cornice Blocking course Parapet Eaves course Corbel Lintel Jamb Reveal Sill Drip course Pise walling *Dhaji* walling Hollow masonry Reinforced brick work

Miscellaneous —Retaining walls Depths of foundations Counterforts and buttresses Revetments Construction and sinking of masonry wells Simple masonry dams Technical names of various parts Scaffolding Shears Derrick Gyn Gantry Plastering Pointing

EARTHWORK*

(*1st year, 2nd half session*)

Definitions Contracts Stability and properties of soils Measurement and setting out Instruments used Sections and volumes Drainage Puddling Consolidation Dressing and Turfing Rates Lift and lead

BUILDING CONSTRUCTION*

(*1st and 2nd years*)

Sites Foundations, description of different types and calculations Walls, strutting buttresses and pilasters, shoring and under pinning Arches Chimney stacks, details of design Methods of fitting door frames to walls Damp proof courses Columns and stanchions with details of design Staircases with details of design Floors and ceilings Roofs types and different methods of support House fittings Ventilation Reinforced concrete construction, calculations with details of design of simple slabs, T beams and columns Proportions of cement, ballast and sand

* See time tables on pages 177 and 178

ROADS.

(2nd year)

History, survey, alignment, formation, foundations Hill roads, plains roads, earth roads, bridle paths, gradients, curves, banking on curves, camber, drainage, various types of wearing surfaces, concrete roads, footpaths, dust prevention, traffic, traffic census, collection, consolidation, maintenance motor transport, types of bridges and culverts

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RAILWAYS.

(2nd year)

Land required Earthwork Road crossings Grades and Ruling gradients Permanent way and Ballast Materials used and functions of permanent way Points and Crossings Maintenance of permanent way Plate laying Superelevation Station requirements Light railways Mountain Railways Tunnelling

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BRIDGES

(2nd year)

Selection of site Types of bridges Foundations piers and abutments Descriptions with details of stone brick, steel and concrete bridges Piles and pile driving Sheet, screw and interlocking piling Diving operations reclamations and dredging

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IRRIGATION

(2nd year)

Well Irrigation.—Source of supply Movement of subsoil water Quantity of sub soil water The Mota Drainage cones Classes of wells Methods of raising water from wells Area protected by wells

Channels.—Duty Design of channels Critical velocity. Silt Spoil banks —High embankments Losses by percolation and evaporation Design of outlets Use of discharge tables and charts

Head works.—Brief descriptions of head works Main weirs Heights of weirs Afflux Causes of failure of weirs Description of foundations of weirs Functions of drop shutters Under sluices Object and descriptions of groynes below weirs Systems of lifting sluices Talus below weirs Afflux embankments Canal head regulators Temporary bunds

Drainage crossings.—Brief descriptions

Works.—Regulators Falls and their design Rapids Bed-bars Escapes

Drainage works.—Importance of draining an irrigated area Silt tanks

Training works.—Their object Dead water Straightening channels Temporary training works Methods of influencing current

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SANITARY ENGINEERING.

(2nd year)

PART I

WATER SUPPLY.

Sources of supply.—Rivers, lakes, springs and wells Purity at source Sampling of water for analysis

Pumping arrangements.—Intakes and unfiltered water pumping stations Filtered water stations *Tests Rising* mains

Storage —Reservoirs and tanks

Filtration.—Simple sand and mechanical filters Sterilization and chlorination

Distribution.—Lay out of simple mains Water supply fittings Calculation of hydraulic mean gradient and hydraulic mean depth Losses of head

PART II

SANITARY ENGINEERING.

Systems of collection and removal of refuse—State of sanitation in India Refuse removal

House fittings—Water closets Urinals Sinks Baths House drains Indian adaptations Connexions with sewers Pail depots

Sewers and drains.—Lay out Separate and combined systems Materials used in construction Flushing Calculations of sizes and gradients

Public conveniences—Dry pattern latrines Water flushed latrines Urinals

Sewage disposal—Selection of site for outfall Purification by (*a*) land irrigation (*b*) intermittents and filtration, (*c*) Septic tanks and (*d*) Activated sludge system of sewage disposal

FIELD ENGINEERING.

(2nd year)

(i) Use of Spars—Various knots and lashings and the suitability of each to certain circumstances Coiling and handling of ropes Blocks and tackle Reeving of blocks Use of handspikes and rollers Hold fasts Guys Use and construction of derricks shears gyns, and trestles in placing girders or columns in position in building or for other similar work

(ii) Ground Tracing—General principles (Ma Manual) Working plans for foundations

level ground and on slopes Trenches with vertical and with sloping sides Laying out buildings on the ground and similar practical instruction

ESTIMATING.

(*2nd year*)

Taking off —Rules for taking off quantities in earthwork masonry flooring wood work mouldings arches, groyned roofs domes steel work and plumber's work

Abstracting —Calculation of quantities of materials required to be furnished for the completion of work

Rates —Rates and their analysis Rates for carriage of materials by different means of transport

Specifications —Detailed and General

Contracts —Preparation Contract law

NOTES ON WORKS.

(*1st and 2nd years*)

Each student will keep a Note-book and record in it descriptions and sketches of any materials manufacturers or works visited by him

Advantage will be taken of every work of repair or construction under execution in or near Roorkee, by careful inspection both under the instruction of a master and independently Full notes and sketches are to be recorded by students in their Note books which are to contain no transcripts from their Text books The date of each visit to a work should invariably be recorded at the head of the notes referring to the same

These Note books will be inspected once a month and marks will be allotted at the end of each term

Group II.—PURE AND APPLIED MATHEMATICS

ELEMENTARY MATHEMATICS.

(*1st year*)

GEOMETRY.

Students will be expected to be familiar with the subject matter of Hall and Stevens School Geometry, Parts I—IV Students will also be expected to solve simple riders and to apply the propositions practically in the solution of easy graphical problems requiring geometrical drawing

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TRIGONOMETRY.

Angles and their measurements Trigonometrical ratios The relation between the ratios of complementary and supplementary angles, and of multiple and sub multiple angles Simple identities and equations Solution of triangles including problems relating to heights and distances, and those requiring the use of logarithms

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MENSURATION.

Areas of plane rectilineal figures and of segments and sectors of circles and lengths of chords Surfaces and volumes of cones frusta of cones, spheres, zones of spheres, pyramids prisms, cylinders and wedges Use of the planimeter

ELEMENTARY MECHANICS

(1st year)

Conception of force and its unit stress and strain Elementary laws relating to concurrent forces Parallelogram and triangle of forces Lami s theorem Parallel forces Funicular polygons Moments Centres of gravity Friction Simple cases of equilibrium Principle of work Simple machines namely lever screw, pulleys wheel and differential pulleys velocity ratio mechanical advantage and efficiency Velocity and acceleration Relative velocity Absolute unit of force Simple examples on rectilinear motion including the principles of energy and momentum

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ELEMENTARY APPLIED MECHANICS

(2nd year)

Stress and strain analysis Calculation of cross sectional areas of a tie rod Application of Gordon s and Rankine s formula to find safe stress in a compression member Graphical determination of stresses in simple roof frames including the effect of wind pressure Simple cases of bending moment and shearing force diagrams for cantilevers and simply supported beams Moments of resistance of rectangular beams The manner in which the bending moment is resisted and the flange stresses in I beams Neutral axis and its location Design of wooden beams Stiffness of beams and the calculation from deflection formulae for simple cantilevers and beams under (1) a distributed load and (2) a single concentrated load Graphic testing of retaining walls and arches

HYDROSTATICS AND HYDRAULICS.

(*2nd year*)

Fluid pressure at a point in a mass of liquid at rest, and on a plane surface partly or wholly immersed. Intensity of pressure and whole pressure Centre of pressure in simple elementary cases Atmospheric pressure. Barometer. Syphon and water pumps Velocity afflux through orifices and over weirs. Fluid friction and application of formulae for discharge through pipes and channels to practical cases.

Group III —SURVEYING

(1st year)

The Level—The use and adjustment of the level Different types of levels and their constructional details Different types of levelling staves and their markings Their relative merits Precautions in using levels Level field books of different kinds Booking and reduction of levels Comparative merits of reduction methods Definition of terms used in levelling Sources of error Curvature and refraction Longitudinal sections and their plotting Allowable closing error

Chain Surveying—Equipment Ranging and chaining lines Errors in chaining Customary limits of error Reconnaissance Selection of stations Keeping of the field book *Obstacles which obstruct chaining but not ranging* Obstacles which obstruct ranging but not chaining Obstacles which obstruct ranging and chaining Plotting the survey

(Students will carry out and plot an actual chain survey)

Compass Surveying—The Prismatic Compass, constructional details and its uses Bearings and angles Magnetic and true meridian Variation Designation of bearings Comparative merits of whole circle and quadrantal reckoning Back bearings Application of compass surveying Local attraction Elimination of effects Sources of error Limits of precision Adjustment of closing error

(Students will carry out and plot an actual survey with the compass)

(2nd year)

The Theodolite—The use and adjustments of the theodolite Parts for horizontal measurement Parts for vertical measurement Details of the Theodolite Measurement of angles Repeating angles Requirements of the Theodolite Conditions established by adjustment Errors in non adjustable parts Elimination of these errors

Traversing and its computations—Definition of a traverse Gale's traverse system Conditions fulfilled in a closed traverse Calculation and tabulation of co ordinates Closing error and its adjustment Advantages of plotting by co-ordinates Omitted measurements and their calculations

Plane-tabling—Equipment Advantages and disadvantages of plane tabling Maxims for plane tabling Order of working Methods of plane tabling Fixing of position Traversing with the plane table Engineering contouring

(Students will carry out an actual theodolite traverse in the field and fill in the details of the area with the plane table

They will also carry out a plane table traverse filling in all details and contouring the area)

Curves and Alignments—Designation of curves Elements of curves Setting out by means of Theodolite and chain Setting out by means of chords and offsets Methods of calculation when curves start or end with sub chords Tabulation Problems in simple and compound curves Curve of deviation Transition curves Simple method for laying out a transition curve

Engineering Surveying—Surveying requirements when making a project for a building bridge road canal distributary or railway.

Group IV.—DRAWING

(1st and 2nd years)

The course has been arranged to carry the student step by step in the technique of drawing as a preparation for a course in engineering design and survey mapping

Drawing will be made of building construction details, culverts, railway and road plans etc In addition, drawings will be made from actual measurements taken of existing buildings Projections and sections of solids

NOTE — All drawing plates must be done in College during drawing period and the dates of commencement and completion with the student's name and order of standing in the class are to be written on each plate

Group V.—MECHANICAL AND ELECTRICAL ENGINEERING.

WORKSHOPS.

(*1st and 2nd years*)

The object of the course is to familiarise students with the appearance, structure and properties of materials commonly used in engineering and with the tools and processes by which they are shaped

Carpentry.—A series of simple exercises will be provided including the preparation of various types of joints used in wood work

Foundry —The use and preparation of sand moulds and the explanation of foundry methods

Students will be provided with simple patterns and cores from which they will prepare moulds and make castings in white metal etc

Forge —Use of tools employed in forge work Exercises in drawing down upsetting welding etc

Fitting and Machine Shop —Use of hand tools in bench work Cutting tools and their action Characteristic feature of simple machine tools

DESCRIPTIVE MECHANICAL ENGINEERING

(*1st year*)

Fastenings —Screws bolts nuts their production and uses Rivets and riveted joints standard iron and steel sections

Boilers.—Shell, Water-tube and Fire-tube Description of the more common types, their erection and inspection Boiler accessories, description and uses Steam pipe lines Arrangement and Lagging

Steam Engines.—Description of the simplest types, including portable engine Engine foundations Erection

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(2nd year)

Internal Combustion Engines.—Description of oil, petrol and gas engines Foundations Location of starting and running faults

Hydraulic Machinery.—Laying and anchoring of pipe lines Description of turbines Description of common types of reciprocating and centrifugal pumps

Power Transmission.—Elementary treatment of power transmission by means of belts, gearing, ropes, chain and friction drives

Lectures will be illustrated by models, wall diagrams of modern machinery and conducted inspections of examples of the above machinery in the College workshop and laboratories

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ELEMENTARY ELECTRICAL ENGINEERING.

(2nd year)

The lightning conductor, parts used in and general rules for erection, function of the lightning conductor Earth resistance of the conductor and method of measuring it. Other tests to see that the conductor is in good condition

House Wiring.—Principles laid down by Government in "Specifications for internal wiring"

D C. Power Plants.—Lay-out of simple D. C. distribution systems Description and working of simple switchboards. Protection devices and knowledge of normal faults in a small power station (The course will not include the theory or manufacture of electrical machinery, but laboratory demonstrations will be given of every principle dealt with in the course)

Group VI —GENERAL.

ELEMENTARY SCIENCE

(1st year)

The subject is an elementary one and is taken up with special reference to the Engineering subjects The elementary physical principles taught are illustrated by numerical examples in tutorial work and the measurement of principal quantities involved is carried out in the physical laboratory by students in a simple manner

General Measurement—Fundamental units in C G S and F P S systems Mass density and specific gravity Buoyancy Determination of specific gravity by simple methods Atmospheric pressure and Boyle's Law, Fortin and aneroid barometers syphon, pressure gauges and water pumps

Heat—Mercury thermometer and its graduation Expansion of solids liquids and gases with simple applications Charles' law Units of heat specific heat, its measurement by the method of mixtures measurement of specific heat of liquid by the method of cooling Laws of fusion and ebullition, melting and boiling points, latent heat evaporation Transfer of heat by conduction, convection and radiation with simple applications of these methods Heat and work, mechanical equivalent of heat Calorific value of coal Thompson's fuel calorimeter

Light—Rectilinear propagation of light and shadows Units of illumination and illuminatory power Photometers Laws of reflection and refraction mirrors and lenses Elementary Electricity and Magnetism

PROCESS WORK.

(1st year.)

Students will be shown the details of both the Ferrogallic and Ferro-prussiate processes and will be expected to make prints from their own tracings on paper sensitised commercially and on paper which they will themselves sensitise. Each student will submit three copies of prints on each kind of paper in both processes.

Group VI.—GENERAL.

ELEMENTARY SCIENCE.

(*1st year.*)

The subject is an elementary one and is taken up with special reference to the Engineering subjects The elementary physical principles taught are illustrated by numerical examples in tutorial work and the measurement of principal quantities involved is carried out in the physical laboratory by students in a simple manner

General Measurement.—Fundamental units in C G.S and F.P.S. systems Mass density and specific gravity. Buoyancy Determination of specific gravity by simple methods Atmospheric pressure and Boyle's Law; Fortin and aneroid barometers, syphon, pressure gauges and water pumps.

Heat.—Mercury thermometer and its graduation. Expansion of solids, liquids and gases with simple applications Charles' law Units of heat, specific heat, its measurement by the method of mixtures, measurement of specific heat of liquid by the method of cooling. Laws of fusion and ebullition, melting and boiling points, latent heat, evaporation. Transfer of heat by conduction, convection and radiation with simple applications of these methods. Heat and work, mechanical equivalent of heat Calorific value of coal. Thompson's fuel calorimeter

Light.—Rectilinear propagation of light and shadows Units of illumination and illuminatory power. Photometers Laws of reflection and refraction, mirrors and lenses.

Elementary Electricity and Magnetism.

PROCESS WORK.

(*1st year*)

Students will be shown the details of both the Ferrogallic and Ferro-prussiate processes and will be expected to make prints from their own tracings on paper sensitised commercially and on paper which they will themselves sensitise. Each student will submit three copies of prints on each kind of paper in both processes.

Group VII.—PROJECT AND CIVIL ENGINEERING DESIGN.

The student will be required to design a number of simple structures under professional instruction and guidance

The course will include the design of small buildings, culverts, simple design of beams, columns and slabs in re inforced concrete Steel trusses, steel stanchions and small Falls for minors and distributaries

Special stress will be laid on the design of constructional details

The actual Project will consist of the preparation of a detailed design for an engineering scheme complete with report specifications and estimate Each student will do his work independently

Group VIII.—PHYSIQUE AND GENERAL FITNESS.

(1st and 2nd years.)

Physical Drill. Proficiency in games and athletic sports. Physical and moral fitness for work in the engineering profession.

The sub heads and marks allotted to Group VIII, Physique and General Fitness are :—

Physical Drill	..	100
Athletics—Proficiency in games and sports	.	150*
General Fitness—Physical and moral fitness for work in the engineering profession	..	150
Total	.	400

* Athletics will be marked for Football, Hockey, Tennis and Athletic sports and such marks will be awarded by the Headmaster in consultation with the Principal. Any three will carry the 150 marks.

Group VII.—PROJECT AND CIVIL ENGINEERING DESIGN.

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The course will include the design of small buildings, culverts, simple design of beams, columns and slabs in reinforced concrete Steel trusses, steel stanchions and small Falls for minors and distributaries

Special stress will be laid on the design of constructional details

The actual Project will consist of the preparation of a detailed design for an engineering scheme complete with report, specifications and estimate Each student will do his work independently.

Group VIII.—PHYSIQUE AND GENERAL FITNESS.

(1st and 2nd years.)

Physical Drill Proficiency in games and athletic sports Physical and moral fitness for work in the engineering profession

The sub heads and marks allotted to Group VIII Physique and General Fitness are :—

Physical Drill	..	100
Athletics—Proficiency in games and sports	..	150*
General Fitness—Physical and moral fitness for work in the engineering profession	..	150
Total	..	400

* Athletics will be marked for Football Hockey Tennis and Athletic sports and such marks will be awarded by the Headmaster in consultation with the Principal *Any three* will carry the 150 marks

COURSE OF STUDY AND SYLLABUS
DRAFTSMAN CLASS.

College attendance.—During the whole session from 8 a m to 11 a m and from 12 noon to 2 p m

Length of course—Usually three years, but it may be less in the case of specially efficient students

Syllabus—

(1st Year)

1 Block printing of improved style by quick methods
2 Italic printing
3 Scales Principles of scales and scaling
4 Simple geometrical figures Construction of arches
5 Projection of simple solids
6 Flat tinting Shades and shadows
7 Small culverts, with sections
8 Railway culvert, with sections
9 Simple building, with sections
10 A small modern residence with flat roof
11 A small modern residence with pent roof
12 Details of doors and windows

(2nd Year)

1 Parallel of the orders
2 Doors and windows with details from measurement
3 A masonry bridge of two or three arches with sections
4 First class rest house
5 Water tower with details from measurement
6 Regulator at the head of a small distributary
7 A canal fall with sections
8 Application of the orders
9 A building from measurement
10 Steel construction details

11 Abutment span of steel railway bridge from measurement
12. Plotting Field Book of a Chain Survey

(3rd Year)

1 Building drawings from rough sketches
2. Tracing of No 1.
3. Large building from measurement.
4. Tracing of No 3
5 One of the New Delhi or other buildings.
6. Tracing of No. 5.
7. Drawing of a reinforced concrete bridge.
8 New P W D buildings
9 Perspective
10 Syphon.
11 Building for estimating.
12. Estimating

Ferrotype in all its branches in the second year, to be done out of College hours

A special Instructor is in charge of the Draftsman Class.

Marks.—No marks are given, but the Principal inspects the whole work of every student at the end of each College Session and decides which students are qualified for promotion to the next year, or for the award of a certificate as a Draftsman

General.—The students are trained as simple Draftsmen and not as Computors or Estimators. Those who, in three years, do not attain to a proper standard may be required to prolong their course, or to leave the College without a certificate The training of a few selected students in simple estimating in their 3rd Year has been introduced. Those who pass this test in Estimating will have an entry on their certificates as "Qualified in Simple Estimating."

Discipline.—For discipline the students come under the ordinary College regulations while at the College.

PRIZES

CIVIL ENGINEERING CLASS

THE COUNCIL OF INDIA PRIZE OF Rs 1,000

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering

THE THOMASON PRIZE OF Rs 250

To the most distinguished student, who obtains the Honours Diploma in Civil Engineering but does not obtain the Council of India Prize

THE RAI BAHADUR KANHAIYA LAL GOLD MEDAL

To the most distinguished Indian student, who does not obtain the Thomason or Council of India prize

THE THOMASON GOLD MEDAL AND BOOKS WORTH Rs. 25.

To the student who submits the best engineering projects of a certain minimum excellency

THE CAUTLEY GOLD MEDAL.

To the student who is the best mathematician and who obtains not less than two thirds of the total marks in Group II.

THE CALCOTT REILLY MEMORIAL GOLD MEDAL

To the student, who obtains the highest number of marks in Applied Mechanics

THE GENERAL MACLAGAN PRIZE, BOOKS TO THE VALUE OF Rs 31

To the student, who obtains the highest number of marks in experimental science Highest marks in Electrical Engineering final year result plus highest marks in Physics 1st year results.

THE SUSHILA AND J MITRA MEMORIAL SILVER MEDAL

To the Indian student, who obtains the highest number of marks in chemistry in 2nd year results If there is a tie 1st year results will decide

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THE PURANMAL SILVER MEDAL FOR PUBLIC HEALTH ENGINEERING

The Puran Mal Silver Medal for Public Health Engineering awarded to the Civil Engineer class, 3rd year, student, who obtains the highest marks in the final external examination paper on Water Supply and Sanitary Engineering

SILVER MEDAL

for

CIVIL ENGINEERING (THEORY)	DRAWING HIGHEST MARK IN FIRST YEAR
SURVEYING HIGHEST MARKS IN THREE YEARS	MECHANICAL ENGINEERING HIGHEST MARKS IN THREE YEARS

LABORATORY WORK

To the student, who obtains the highest number of marks in practical and class work in Physics and Chemistry

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OVERSEER CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs 100

To the most distinguished student, who obtains the highest number of marks

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THE KEAY MEMORIAL SILVER MEDAL AND Rs 18 (APPROX)

To the student, who obtains the highest number of marks in Estimating

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THE DURGA DAS DUTTA MEMORIAL SILVER MEDAL

To the most distinguished Indian student, who obtains the Higher Certificate and who obtains the highest number of marks

THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the most distinguished Indian student who obtains the highest number of marks

THE RAI BAHADUR KANHAIYA LAL SILVER MEDAL

To the Indian student who obtains the second highest number of marks

THE FAIRLEY MEMORIAL SILVER MEDAL

To the student who obtains the highest number of marks in Applied Mechanics

THE SULLIVAN MEMORIAL SILVER MEDAL

To the student who obtains the highest number of marks in Mechanics

LALA PURAN MAL MEDAL FOR PUBLIC HEALTH ENGINEERING

The Puran Mal Silver Medal for Public Health Engineering awarded to the Overseer class 2nd year student, who obtains the highest marks in the final external examination paper on water supply and sanitary engineering

THE PROJECT PRIZE OF A SILVER MEDAL

To the student who submits the best engineering project

SILVER MEDALS

for

MATHEMATICS	DRAWING
DESCRIPTIVE ENGINEERING	
SURVEYING	WORKSHOP PRACTICE

To those students who obtain the highest number of marks in these subjects

DRAFTSMAN CLASS

THE GENERAL MERIT PRIZE OF A SILVER MEDAL AND Rs. [illegible]

To the most distinguished student, who passes out of the class

A SILVER MEDAL AND Rs 20

To the student, who passes out second in the class

N B—No prize will be awarded when the compet tion for it is ins fficient or for any other adequate reasons

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GENERAL

In addition to the numerous academic prizes there are many challenge cups and trophies for various events These are mentioned below —

(i) *The Harcourt Butler Cup*—

The cup is awarded under two sub heads Works and Play

Play shall be deemed to be that portion of the course (Civil Engineer Class) called Physique and General Fit ness group as follows

A F I and U T C	150 marks
Athletics—Proficiency in Games and Sports	250 marks
General Fitness—Physical and Moral Fitness for work in the Engineering Profession	400 marks
Total—For Play Group	800 marks
Total—For Studies or Work for the three years	6 990 marks

This total is reduced to a maximum of 800 marks by the multiplier 80/699 (or 0 1144)

Harcourt Butler Cup is awarded to the student who obtains the highest marks out of a total of 1 600 marks con sisting of 800 marks for play and 800 marks (reduced from a total of 6 990 as above) for work

In case of a tie the student who obtains higher marks in the group Work (i e studies)

(ii) The Sandes Challenge Cup is to be awarded annually as a Challenge cup to the College student of what-

A SILVER MEDAL AND Rs 20

To the student, who passes out second in the class

N.B—No pr ze will be awarded when the competition for it is ins ffi ient or for any other adequate reasons

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In case of a tie the student who obtains higher marks in the group Work (i e studies)

(ii) The Sandes Challenge Cup is to be awarded annually as a Challenge cup to the College student of what

(iv) The Runner up Challenge Cup awarded to the student, irrespective of class, who obtains the second highest number of marks in the Annual Sports

(v) The Bradshaw Smith Challenge Cup awarded to the student irrespective of class, who wins the Cross Country Race

(vi) The Cross Country Race Challenge Cup awarded to the student, irrespective of class, who finishes second in the Cross Country Race

(vii) The Verriéres Challenge Cup awarded to the winning Relay Race Team, irrespective of class, at the Annual Sports

(viii) The McLaren Challenge Cup awarded to the winning Tug-o -War Team, irrespective of class, at the Annual Sports

(ix) The Barnett Challenge Cup, awarded to the Overseer Class student, who obtains the highest number of marks in the Annual Sports, not being a winner of either the Lion Trophy or Runner up Challenge Cup

(x) The Single Sculls Challenge Cup, awarded to the winner of this race in the Annual Regatta irrespective of class

(xi) The Officers Challenge Cup, Prince of Wales' Own Sappers and Miners, awarded to the winners of the Open Double Sculls in the Annual Regatta irrespective of class

(xii) The Boating Challenge Cup, awarded to the best oar of the 3rd year Civil Engineering Class or 2nd year overseer class

(xiii) The Beer Challenge Cup, awarded to the winners of the Pair Oars Race irrespective of class.

who represents the College in Olympic will be awarded 10 marks Otherwise 8 or 6 marks will be allotted by the Officer in charge of the game at his discretion

(b) *Athletic Sports*—The award of marks will be decided by the Championship placing as follows

First and Second positions	10 marks
Third and Fourth positions	8 marks
Fifth and Sixth positions	6 marks

The mean of marks obtained by a student in each of the events of the sub groups 5 6 7 8 will then be the marks obtained by the student concerned in that sub group

4 Marks are awarded out of a maximum of 100 marks, the balance of 20 being allotted to a special sub group 9 The method of award of these 20 marks is as follows

If a student obtains marks in X of the sub groups 1, 2, 3 4 and Y of the sub groups 5, 6, 7, 8, then in the sub group 9 he will be awarded 5X or 5Y marks whichever is less *except* that, in case he obtains marks in seven out of the first eight sub heads, he will be awarded 17 marks

Examples—A student in sub group 9 obtains—
0 marks if he gains marks in 1, 2, 3, 4 and none in 5, 6, 7, 8
5 marks if he gains marks in 1, 2, 3 and also in 5
10 marks if he gains marks in 1, 2 and also in 6, 7, 8
15 marks if he gains marks in 2, 3, 4 and also in 6, 7, 8
17 marks if he gains marks in 1, 2, 3, 4 and also in 5, 6, 7
20 marks if he gains marks in 1, 2, 3, 4 and also in 5, 6, 7, 8

5 The total of marks obtained in the nine sub groups will then decide the winner of Sandes Challenge Cup

(iii) The Lion Challenge Trophy awarded to the student, irrespective of class, who obtains the highest number of marks in the Annual Sports

(iv) The Runner up Challenge Cup awarded to the student irrespective of class, who obtains the second highest number of marks in the Annual Sports

(v) The Bradshaw Smith Challenge Cup awarded to the student irrespective of class who wins the Cross Country Race

(vi) The Cross Country Race Challenge Cup awarded to the student irrespective of class who finishes second in the Cross Country Race

(vii) The Vernieres Challenge Cup awarded to the winning Relay Race Team, irrespective of class, at the Annual Sports

(viii) The McLaren Challenge Cup awarded to the winning Tug o War Team irrespective of class, at the Annual Sports

(ix) The Barnett Challenge Cup, awarded to the Overseer Class student who obtains the highest number of marks in the Annual Sports, not being a winner of either the Lion Trophy or Runner up Challenge Cup

(x) The Single *Sculls Challenge* Cup, awarded to the winner of this race in the Annual Regatta irrespective of class

(xi) The Officers Challenge Cup, Prince of Wales' Own Sappers and Miners awarded to the winners of the Open Double Sculls in the Annual Regatta irrespective of class

(xii) The Boating Challenge Cup, awarded to the best oar of the 3rd year Civil Engineering Class or 2nd year overseer class

(xiii) The Beer Challenge Cup, awarded to the winners of the Pair Oars Race irrespective of class

(xiv) The Challenge Fours Cup awarded to the winners of the Fours race in the Annual Regatta irrespective of class

(xv) The Tennis Singles Challenge Cup, awarded to the winner of the annual open Tennis Tournament, irrespective of class

(xvi) The Tennis Doubles Challenge Cup, awarded to the winners of the annual open Tennis Tournament irrespective of class

(xvii) The Puri Cup awarded to the winner of the annual open Squash Racquets Singles Tournament, Civil Engineer Class only

(xviii) The Squash Racquets Singles Runner up Cup, awarded to the runner up of the annual open Squash Racquets Tournament, Civil Engineer Class only

(xix) The Mechanical and Electrical Engineer Class Challenge Cup, awarded to the student, irrespective of class, who obtains the highest aggregate in the annual Olympic contest with the Officers and British Non commissioned Officers of the King George's Own Sappers and Miners

(xx) The Vizianagram Cup, awarded annually to the best Indian athlete of the 3rd year Civil Engineer Class

(xxi) The Shooting Challenge Cup, awarded annually to the Section of the Platoon of the University Training Corps, which obtain the highest score

(xxii) The Stumpe Challenge Cup for inter class athletics Open to all classes

(xxiii) The Inter year class football and hockey challenge cup Open to all classes

LIST OF TEXT-BOOKS.

LIST OF TEXT-BOOKS FOR DIFFERENT CLASSES

Each student should own his own copy of each book marked with an asterisk and these are obtainable generally from the College Book Depot at 12½ per cent off published prices *Such books will not be obtainable on loan from the* College Library Books unmarked with an asterisk are recommended for reference and such books are obtainable on loan from the College Library

	Particulars	Cost Rs a
	CIVIL ENGINEER CLASS I YEAR	
*	Stru tural Engineering —Husband and Harby	10 12
*	Elements of Co ordinate Geometry —Loney	2 10
*	Dynamics —Landon	5 8
*	Statics —Puri B D	5 12
*	Examples in Theory of Structures —Landon	3 8
*	Theory of Structures —Morley	8 8
*	Hydraulics and its Application —Gibson	say 8 0
*	Roorkee Treatise on Surveying —Part I	3 1
*	Industrial Chem stry for Engineering Students Henry K Benson Ph D	say 8 0
*	Heat for Engineers —Darling	7 12
*	Light —Stewart	4 6
*	Electricity and Magnetism —Reynolds	3 4
*	Heat Engines —Low	10 0
*	Theory of Machines —Mackay	13 12
	Total Rs	94 13

Rivington s Notes on Building Construction —Parts I and II

Mitchell s Building Construction —Advanced Course

Architectural Building Construction —Jaggard and Drury Volumes I II and III

M E S Handbook —Volume I, Part I.

Chamber s Mathematical Tables

Dynam cs —Ramsey, Part I.

Particulars

"Hydrostatics"—Jessop and Gaunt

"Calculus"—Lamb

"Elementary Calculus"—B D Puri

"Modern Framed Structures"—Johnson, Bryan and Turneaure, Volumes I, II and III.

"Stresses in Framed Structures"—Hool and Kinne

"Analysis of Engineering Structures"—Pippard and Baker

"Applied Elasticity"—Timoshenko and Lessells

"Strength of Materials"—Case

"Hydraulics"—F C Lea

"Applied Hydraulics"—Addison

"Surveying"—Norman Thomas.

"Chemistry of Materials"—Lighon

"Metallography"—Desch

"Metallurgy of Common Metals"—Austin

"Cements, Limes and Plasters"—Eckel

"Heat and Principles of Thermo-dynamics"—Draper

"Steam and Steam Engine"—Ripper

"Theory of Machines,"—Toft and Kersey

"Technical Electricity"—Davidge and Hutchinson

CIVIL ENGINEER CLASS, II YEAR

	Cost Rs	a
* "Roorkee Treatise on Earthwork"	1	12
* "Roorkee Treatise on Bridges"	7	0
* "M E S Handbook, Water Purification," Volume V	5	0
* "Military Engineering (Volume V) Roads 1935"	5	0
* "Roorkee Treatise on Railways	5	1
* "Roorkee Treatise on Surveying" Part II	2	10
* "Callendar's Steam Tables"	2	4
* "Mollier's Diagrams"	1	4
* "Applied Thermo dynamics"—Robinson	10	12
* Maccall's "Continuous Current"	9	8
* Maccall's "Alternating Current"	9	8
Total Rs	59	11

"Roorkee Treatise on Estimating"

"War Office Manual of Field Engineering," Volume II

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	Particulars	Cost Rs a
	CIVIL ENGINEER CLASS I YEAR	
*	Structural Engineering —Husband and Harby	10 12
*	Elements of Co ordinate Geometry —Loney	2 10
*	Dynamics —Landon	5 8
*	Statics —Purn B D	5 12
*	Examples in Theory of Structures —Landon	3 8
*	Theory of Structures —Morley	8 8
*	Hydraulics and its Application —Gibson	say 8 0
*	Roorkee Treatise on Surveying —Part I	3 1
*	*Industrial Chemistry for Engineering Students* Henry K Benson Ph D	say 8 0
*	Heat for Engineers —Darling	7 1.
*	Light —Stewart	4 6
*	Electricity and Magnetism —Reynolds	3 4
*	Heat Engines —Low	10 0
*	Theory of Machines —Mackay	13 12
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Architectural Building Construction "—Jaggard and Drury Volumes I II and III

M. E S Handbook —Volume I, Part I.

Chamber s Mathematical Tables

Dynamics —Ramsey Part I.

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"Elementary Calculus"—B D Puri
"Modern Framed Structures"—Johnson, Bryan and Turneaure, Volumes I, II and III.
"Stresses in Framed Structures —Hool and Kinne
"Analysis of Engineering Structures'—Pippard and Baker
"Applied Elasticity —Timoshenko and Lessells
"Strength of Materials —Case
"Hydraulics —F C Lea
"Applied Hydraulics'—Addison
"Surveying"—Norman Thomas.
"Chemistry of Materials"—Lighon
"Metallography —Desch
'Metallurgy of Common Metals'—Austin
"Cements, Limes and Plasters'—Eckel
'Heat and Principles of Thermo-dynamics'—Draper
"Steam and Steam Engine'—Ripper
'Theory of Machines,'—Toft and Kersey
'Technical Electricity —Davidge and Hutchinson

CIVIL ENGINEER CLASS, II YEAR

	Cost Rs	a
* "Roorkee Treatise on Earthwork"	1	12
* "Roorkee Treatise on Bridges	7	0
* ' M E S Handbook, Water Purification Volume V	5	0
* 'Military Engineering (Volume V) Roads 1935'	5	0
* "Roorkee Treatise on Railways	5	1
* 'Roorkee Treatise on Surveying Part II	2	10
* 'Callendar's Steam Tables	2	4
* "Mollier s Diagrams'	1	4
* "Applied Thermo dynamics'—Robinson	10	12
* Maccall's "Continuous Current'	9	8
* Maccall s 'Alternating Current"	9	8
Total Rs	59	11

"Roorkee Treatise on Estimating'
"War Office Manual of Field Engineering," Volume II

Particulars

"Engineering Design"—Fordham.
"Competitive Design of Steel Structures"—Russell and Dowell.
"Structural Engineering"—Kirkham
"Irrigation Pocket Book"—Buckley.
"River Discharges"—Hoyl and Grover
"Waterworks Handbook"—Flinn, Weston and Bogert.
"Rainfall Reservoirs and Water Supply"—Binnie
"Road Engineering"—Leeming
"Differential Equations"—Miller.
"Differential Equations"—Murray.
"Plane and Geodetic Surveying"—Clark, Volume II.
"Text Book of Topographical Surveying"—Close.
"Elements of Curve Design"—Royal Dawson
"Railway Surveying and Permanent Way Work"—Perrott and Badger
"Petrology"—Hatch
"Geology"—Giekie
"Balancing of Engines"—Dalby
"Design of Electrical Machinery"—Clayton.
Electrical Engineering"—Thomalen
"Permanent Way"—Cole.
"Stream Gauging"—Liddell
"Dissipation of Energy below Falls"—Inglis and Joglekar.
"Hydraulic Structures"—Volumes I and II Schoklitsch.
"Irrigation Canal Falls"—Montague
"Fluming"—Montague.

Civil Engineer Class, III Year	Cost Rs a.
* "Sewers and Sewerage"—Whyatt . .	1 12
* "Work of Sanitary Engineer"—Martin	10 0
* "Elements of Reinforced Concrete Design"—Adams	5 0
* "Concrete Handbook"—Hool and Johnson ..	say 7 0
* "Handbook of the Code of Practice of Concrete—Scott and Granville	say 7 0
Total Rs ..	30 12

Particulars

Modern Sewage Treatment —Francis
War Department Manual on Drainage.
Steam Turbines —Kearton
Heat Engines —Inchley
Alternating Current —Kemp.
Transmission of Alternating Current —Rapson
Diagnosing of Troubles in Electrical Machinery —Miles Walker
Protection of Alternating Current Circuits —Stubbings.
Reinforced Concrete Bridge Design —Adams and Chettoe
Reinforced Concrete Bridges —Scott
British Standard Specifications for Portland Cement
The Transmission and Distribution of Electrical Energy —H Cotton.
Notes on flumed aqueducts —Inglis
Notes on Standing Wave Flumes and Flume Meter Falls —Inglis
Energy of Flow Pressure and Momentum Diagrams —Montague
Design of Weirs on Permeable Foundations —A N Khosla
Design of Concrete Structures —Urquhart and O Rourke
Surveying —Norman Thomas
Plane and Geodetic Surveying Volumes I and II—Clark
Thermodynamics for Engineers —Ewing
Steam Power Dalby
Balancing of Engines —Dalby

Particulars	Cost Rs. a.
OVERSEER CLASS, I YEAR	
* "Roorkee Treatise on Earthwork"	1 12
* "Building Construction, Advanced Course"—Mitchell..	7 14
* "Building Construction, Elementary Course"—Mitchell..	4 14
* "Elementary Trigonometry"—Loney	3 1
* "Elementary Mensuration"—Pierrepoint, Part I Re 1-12 and II, III Rs.2-2	3 14
* "Elements of Statics and Dynamics"—Loney ..	6 8
* "Roorkee Treatise on Surveying", Part I ..	3 1
* "Roorkee Treatise on Drawing", Part I ..	3 1
* "Heat Engines"—Low	10 0
* "Class Book of Physics"—Gregory and Hadley, Parts III, IV and V (1 volum)—Parts VI, VII and VIII (1 volume) at Rs.2 each	4 0
* "Logarithmic Tables"—College Manual	1 8
Total Rs. ..	49 9

"Mechanics for Engineers"—Morley.

"M. E. S Handbook"—Volume I, Part I.

Particulars	Cost Rs. a.
OVERSEER CLASS, II YEAR	
* "Building Mechanics"—Sheppard	5 8
* "Military Engineering (Vol. V) Roads 1935" say	5 0
* "Roorkee Treatise on Railways"	5 1
* "Roorkee Treatise on Bridges" . ..	7 0
* "Roorkee Treatise on Irrigation", Volume I ..	4 6
* "Sewers and Sewerage"—Whyatt	1 12
* "Electrical Wiring and Fittings"—Maycock ..	6 0
* "U. P. Irrigation Technical Paper no. 1 (Design of Channels)"—*G. Lacey*	0 14
* "Roorkee Treaties on Estimating"	6 9
* "Elementary Hydraulics for Technical students"—F. C Lea	4 14
* "Military Engineering (Part V)—Water Supply" ..	5 0
Total Rs. ..	52 0

Particulars

War Office Manual of Field Engineering, Volume II.

"Sewage Disposal"—Kershaw.

"Strength and Elasticity of Structural Members"—R. J. Woods.

"Structural Engineering"—Husband and Harby.

"Reinforced Concrete Simply Explained"—Oscar Faber.

"Examples of Reinforced Concrete"—Oscar Faber.

DUPLICATE CERTIFICATES.

For duplicate diplomas and certificates the following charges are levied :

	Rs.
Diploma	24
As Assistant Engineer	24
As Upper Subordinate	16
As Overseer	16
As Lower Subordinate	8
As Draughtsman	8

SUBSIDIARY DEPARTMENTS OF THE COLLEGE.

LIBRARY.

The College Library contains about 26,300 volumes classified as under *

PART I.

Scientific and Professional Works

Class AA.	Pure Mathematics	Class F	Mental, Moral and Social Science
,, AB	Applied Mathematics.	,, G	Civil Engineering
,, B	Physics	,, H	Surveying and Drawing
,, C	Chemistry	,, J	Electrical Engineering
,, D	Geology, Mineralogy and Palæontology	,, K	Mechanical Engineering
,, E	Other Branches of Natural Science.	,, L	Other Professional Works

PART II.

General Literature, Art, Industries, etc

Class M	Recreations and Amusements	Class S	Commerce and Economics
,, N	Geography, Ethnography and Travel	,, T	Agriculture, Forestry and Gardening
,, O	History	,, U	General Scientific and Professional Journals and Transactions
,, P.	Literature and Philology		
,, Q	Arts and Trades		
,, R	Fine Arts	,, X	Indian Government Publications

*The above is the existing classification but a new according to the Dewey System is now in progress

The Library is free to all gazetted Government officers and other outstation residents in special cases can obtain books on application

There is a printed Catalogue, and a Supplement is issued every year, which can be obtained on application to the College office

THE COLLEGE REGISTER OF EMPLOYMENT.

The College registers the names of, and supplies employers with the names of approved engineers, upper subordinates overseers, lower subordinates and draftsmen

THE FOLLOWING INSTITUTIONS ARE ALSO MAINTAINED IN CONNEXION WITH THE COLLEGE

1 Civil Engineering Model Rooms
2 Meteorological Office
3 Water works
4 College Dairy
5 College Dispensary
6 Sports and Athletic Clubs
7 Dehra Dun Contingent, Auxiliary Force India Roorkee Detachment
8 No 15 Platoon, 3rd United Provinces Battalion University Training Corps, Indian Territorial Force

List of Donations to the Thomason College for prizes and other Miscellaneous purposes

Year	Names	Rs
1854	Subscribers to the Thomason Testimonial Fund	2 500
„	Sir Probyn T Cautley K. C B	2,000
1856	Lieut. T Wright, 46th N I	100
„	„ W Marshall 48th N I	100
„	„ T E Dickens Artillery	100
„	„ G Baillie Artillery	100
„	Ensign H. E Wish 26th N I	100
	Lieut E L Earle Artillery	100
„	„ E Smalley, 36th N I	100
„	„ C B Wish, 14th Light Dragoons	100
„	„ A. B Melville, 67th N I	100
1860	„ E C Garstin, 29th N I	100
„	„ E S Wood, 93rd Highlanders	100
1862	Capt W H. Mackesy, 79th Highlanders	100
1864	Lieut. E C Shepherd General List Infantry	100
1865	„ E W Samuels „ „	100
„	„ B J Parsons 23rd N I	100
„	H H the Maharaja of Kashmere	500
„	Lieut J E Sandeman, General List Infantry	100
„	Capt F G S Parker 54th Regiment	100
„	F D M Brown, V C 101st Regiment	100
„	Lieut L Wavell, 22nd N I	100
„	Peter Keay Esq	120
1867	Lieut W S Lillingston, M A 7th Hussars	200
1868	E C Elliston, 58th Regiment	100
1869	Colonel R Maclagan, R E (*for Maclagan Prize Endowment*)	1 000
„	Isser Chandar Sirkar	50
„	Sergt W Sinclair R E	50
„	G W Dowsworth Esq	100
„	J Mole, Esq	50
„	J Lyons, Esq	50
„	S Fraser Esq	20
„	Sergt. P Kelly	50
„	Lieut G Nolan	100
„	J Ferris Esq	20
„	Lala Bihari Lal	100
	C Chisholm, Esq	30
„	H. Mitchell, Esq	20

Year	Names	Rs.
1869	T. Gray, Esq. ..	25
"	J. Southon, Esq.	25
"	Sergt. A. Forsyth	30
"	J. H. Chapman, Esq.	25
"	G. McArthur, Esq.	50
"	J. Gillan, Esq.	25
"	W. Phillips, Esq.	300
"	C. Collogher, Esq.	250
1870	Rai Bahadur Kanhya Lal (*for "Kanhya Lal" Prize Endowment*)	100
"	Capt. C. E. D. Branson, 37th P. N. I.	100
"	Dr. Murray Thomason, M.D., F.R.S.E.	200
1872	Lieut. G. W. Martin, 88th Regiment	100
1873	W. Willcocks, Esq. (*to Engineer Students Mess*)	100
"	E. Hodges, Esq.	100
"	H. H. the Maharaja of Vizianagram	1,000
1874	R. B. Smart, Esq. (Rev. Sur.), (*for Surveying Prize*)	100
"	R. W. L. Hawkins, Esq. (*to Engineer Students Mess*)	100
"	Lieut. W. T. McLaughlin, 48th Regiment	100
"	Reginald H. McLaughlin, Esq.	50
1875	V. B. Paterson, Esq. } S. Jarman, Esq. } F. J. McLaughlin, Esq. } R. L. Campbell, Esq. } (*to Engineer Students Mess*).	190
"	R. W. L. Toozs, Esq.	100
"	A. E. Adie, Esq.	40
"	Lieut. S. M. Maycock, R.E. (*for Mechanism Prize*)	50
"	R. B. Smart, Esq. (Rev. Sur.) (*for Surveying Prize*)	100
"	W. A. Francken, Esq., Assistant Superintendent, Canal Foundry (*to College Recreation Fund*)	50
1876	Lieut. S. M. Maycock, R.E. (*for Mechanism Prize*)	50
"	Capt. Allan Cunningham, R.E. (*for Applied Mathematics Prize*)	50
"	Subscribers to Keay Memorial (balance of subscriptions after erecting Tablet)	1,000
1877	H. H. the Maharaja of Jummoo and Kashmere	1,000
"	Raja of Rutlam	100
"	Captain Allan Cunningham, R.E. (*for Applied Mathematics Prize*)	50
"	Rai Bahadur Kanhya Lal (to change the Prize Endowment of 1870 to the "*Rai Bahadur Kanhya Lal Gold Medal*," similar to Thomason Medal)	1,500
"	Lieut. S. M. Maycock, R.E. (*for Mechanism Prize*)	50
"	Colonel J. G. Medley, R.E. (*yearly since 1863, at Rs. 50*)	750
"	Major A. M. Brandreth, R.E. (*for Note Books and English Prizes*)	50
"	J. T. Farrant, Esq. (*to Engineer Students Mess*)	100

Year	Names	Rs
1878	Colonel J G Medley, R.E (*for Civil Engineering Prize*)	50
,,	Lieut S. M. Maycock (*for Mechanism Prize*)	50
,,	Major A. M Brandreth, R.E (*for Note Books and English Prizes*)	50
,,	Anonymous from Jhansi	100
1880	Colonel J G Medley, R.E (*for Civil Engineering Prize*)	50
	Lieut S M Maycock R E (*for Surveying Prize*)	50
,,	Major A. M. Brandreth, R.E (*for Note Books English and Romanised Urdu Prizes*)	70
	Babu Krishna Chandra Banerji (*for Mathematics*)	50
1881	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
	Lieut S M. Maycock R E (*for Surveying Prize*)	50
,,	Major A. M. Brandreth R.E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	W P Housden, Esq (*to Engineer Students Mess*)	100
1882	Colonel J G Medley, R.E. (*for Civil Engineering Prize*)	50
	Lieut Col. A. M. Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	Lieut J H C Harrison, R E (*to Engineer Students Mess*)	100
,,	,, J H C Harrison, R E (*for Surveying Prize*)	50
1883	Colonel J G Medley R E (*for Civil Engineering Prize*)	50
,,	Lieut Col A M Brandreth R E (*for Note Books English and Romanised Urdu Prizes*)	70
,,	Lieut J H C. Harrison, R E (*for Surveying Prize*)	50
1884	Lieut Col A M. Brandreth R E (*for Civil Engineering Note Books and English Prizes*)	100
1885	Lieut. Col. A. M. Brandreth, R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
	Lala Bihari Lal (*for Language Prize*)	15
1886	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
1887	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
,,	Rai Bahadur Kanhya Lal to found *Silver Medals* for Indians of Upper and Lower Subordinate Classes	1 000
1888	Lieut Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	100
,,	Lala Bihari Lal (*for Language Prize*)	15
,,	Rai Bahadur Kanhya Lal	100
1889	Lieut. Col A M Brandreth R E (*for Civil Engineering Note Books and Estimating Prizes*)	10
,,	Lala Bihari Lal (*for Language Prize*)	
1890	Lieut.-Col A M Brandreth R.E (*for Civil Engineering Note Books and Estimating Prizes*)	

Year	*Names*	*Rs.*
1890	Lala Bihari Lal (*for Language Prize*)	15
1891	Lieut.-Col. A. M. Brandreth, R.E. (*for Civil Engineering, Note Books and Estimating Prizes*)	100
,,	Rai Bahadur Behari Lal *for Language Prize*) . ..	15
1892	Colonel F. D. M. Brown, V.C. *for Civil Engineering Prize*) ..	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	1
1893	Major J. Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1894	Major J. Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1895	Major J. Clibborn (*for Civil Engineering Prize*)	50
,,	Rai Bahadur Bihari Lal (*for Language Prize*)	15
1896	Lieut.-Col J. Clibborn (*for Civil Engineering Prize*)	50
,,	H. E. the Prime Minister of Nepal (*for a Tower Clock*) ..	2,500
1897	Lieut.-Col J. Clibborn (*for Civil Engineering Prize*)	50
1898	Lieut. H. B. D. Campbell, R.E. (*for Civil Engineering Prize*) ..	12
,,	Rai Bahadur Govind Jas (*for English*)	16
1899—1900	Lieut. Col. J. Clibborn (*for Civil Engineering Prize*) ..	12
1906—1922—1924	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian student obtaining Sub Engineer's certificate, U. S. class*)	15
1906—1917	Lala Ram Sahai (*for Language Prize, L. S. class*) ..	15
1908	Members of the Fairley Memorial Prize Committee (*for Applied Mechanics, U. S. class*)	500
1909—1912	Sirdar Kishan Singh (*for Drawing, Mechanical Apprentice class*)	11
1909	Calcott-Reilly Memorial Fund has been transferred to this College on the abolition of the Royal Indian Engineering College, Coopers Hill, England (*Gold Medal for Applied Mechanics*)	1,800
,,	Donations from Ghulam Nabi and other P. W. Subordinates to found the Sullivan Scholarship Medal Endowment Fund for the Lower Subordinates of this College . ..	2,000
1911—1917.	Rai Nathu Mal Sahib (*for best senior Indian student, U. S. class*)	95
1911—1914	Srijut Hem Chander Baugh (*for Natural Science, Mechanical Apprentice class*)	15
1921—1923	Sir Sidney Crookshank for cricket	30
1922—1927	Sushila and J. Mittra Memorial Silver Medal ..	15
1923—24	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian student in Civil Engineer class in Civil Engineering Design*) ..	15
1923	H. E. Sir Edward Maclagan's prize (*for best Civil Engineer class student in Civil Engineering Design*)	100
1924—1932	Babu Amar Nath Dutt, B.A., LL.B. (*for best Indian Student Obtaining Higher Certificate in Overseer Class*) ..	15
1932	G. Lacey, Esq (*for the best performance in the Thomasonian Society*)	25

Year	Names	Rs.
1932	Babu Amar Nath Dutt B.A., LL.B (*for best Indian student obtaining Higher Certificate in Overseer Class*)	16/4
1933	G Lacey Esq (*for the best performance in the Thomasonian Society*)	25
1933	Babu Amar Nath Dutt, B A, LL B (*for best Indian student obtaining Higher Certificate in Overseer Class*)	16/4
1934	Ditto ditto	16/4
1935	Ditto ditto	16/4
1936	Babu Amar Nath Dutt B A, LL B (*for best Indian student obtaining Higher Certificate in Overseer Class*)	9/10
,,	G Lacey Esq (*for the most capable speaker in the Thomasonian Society*)	25
1937	Babu Amar Nath Dutt, B A, LL.B (*for best Indian student obtaining Higher Certificate in Overseer Class*)	15
1938	Ditto ditto	13
,,	G Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25
	[illegible]	500
	Lala Puran Mal *also paid for cost of dies of above silver medals* ..	242
1939	Babu Amar Nath Dutt, B A, LL B (*for best Indian student obtaining Higher Certificate in Overseer Class*)	10
,,	G. Lacey, Esq (*for the most capable speaker in the Thomasonian Society*)	25

RULES OF THE ADVISORY COUNCIL, THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Re-constituted under G. O No. 556G/XV—555-1932, dated June 2, 1933, copy received with Director of Public Instruction, letter No. G/1315, dated June 2, 1933 Rules approved in Director of Public Instruction, U. P. letter, No G/1675, dated July 26, 1933 and G O., U P. Edn Dept no 168C/XV—555, dated December 15, 1933.

1 The function of the Council will be to advise Government on questions of policy, organization, finance, staff, buildings, equipment, the formation or re-constitution of classes, curricula, rules of admission and any other subject connected with the College on which Government may require its advice As the Council will be closely associated with the College and will visit it periodically, it will also be in a position to take the initiative in suggesting improvements and reforms in respect of any of the above matters

2 The Council will consist of —

(1) The Chief Engineer, Public Works Department, Irrigation Branch

(2) The Chief Engineer, Public Works Department, Buildings and Roads Branch

3) The Director of Public Instruction, United Provinces

(4) & (5) Two non-official members, elected by the Legislative Assembly, United Provinces

(6) A representative of the United Provinces branch of the Institution of Engineers India.

(7) A representative of the Punjab Government, nominated by the Punjab Government.

(8) A representative of University Education, nominated by the United Provinces Government

(9) A representative of the Institution of Civil Engineers, London

(10) The Principal, Thomason College, Roorkee.

3 The senior of the two Chief Engineers shall be the President of the Council

4 The Principal of the College will be *ex officio* Secretary of the Council and shall have a right to vote

5 The term of office of non-official members of this Council shall be for a period of three years, provided that a member shall cease to be a member of the Advisory Council when he ceases to be a member of the body which he represents; a new election shall be held by each new Legislative Assembly at its first session, and, at the same time, other bodies shall be required to make their nominations

6 The committee shall meet at least once a year at Roorkee on a date to be fixed by the Principal after informal consultation with the President The Council may also hold any other meetings whenever it appears desirable to do so, at any place in the United Provinces to be fixed by the President

7 Notice of the time and place of meeting will be issued to each member by the Secretary at least 6 weeks in advance

8 Four members of the Council, exclusive of the Principal, who must always be present, shall constitute a quorum

Note —Should the quorum fail and should the President consider the meeting as constituted specially competent to discuss the issue in point the proceedings shall go forwar the opinion of the other members being subsequently obtained by circular

9 The Secretary of the Council may in urgent and other cases, submit matters for the opinion of the Council by correspondence

10. The proceedings of the Council after approval, will be written in a consolidated form and a typed copy of the same will be circulated to all the members and one copy submitted to Government through the Director of Public Instruction for orders.

11. The Council is authorized to call in experts for the consideration of any question on which experts' advice is required, and to recommend the appointment of Sub-Committees to deal with particular questions or with special branches of the work of the College Before consulting any expert whom it is proposed to remunerate for his advice, the Council should obtain the sanction of Government to the payment of such remuneration

12 The official members when attending meetings will draw travelling allowance under the rules. The non-official members will each be paid the ordinary travelling and daily allowance admissible to an officer of the first class

13 It is expected of members that they will, from time to time, pay personal visits of inspection to the College and thus keep in touch with its circumstances, its work and its needs and aspirations.

RULES OF THE BOARD OF STUDIES, THOMASON COLLEGE OF CIVIL ENGINEERING, ROORKEE.

Approved by the Government, vide *letters of the Director of Public Instruction, nos G/2423, G/3358, and G/3828, dated October 23, 1925, September, 1934 and November 14, 1938, respectively*

1 The members of the Board will include the Principal, all Professors and Assistant Professors of the College The Principal will be *ex officio* President

2 The meetings of the Board will be convened by order of the President

3 The Secretary will be elected from among the members of the Board of Studies

4 The Secretary will circulate, before each meeting, a copy of the agenda, together with all the necessary papers relating to subjects entered for discussion

5 Any member, with the previous sanction of the President, may bring forward for discussion any subject of an academic nature pertaining to the College work

6 The Board of Studies will be an Advisory Body, it will not exercise any control over discipline but in consultation with the President, will assist him in —

(a) The appointment of moderators for each external paper.

(b) The scrutiny of all sessional and final pass lists of the Civil Engineer and Overseer classes, and the award of grace marks under the procedure

as laid down for their allotment by Government order.

(c) The allotment of marks for general fitness, total 400, to the students of the 3rd year, civil engineer class just prior to their completing their course

(d) The preparation or revision of all time-tables, syllabuses and courses of study of all classes as the President may deem necessary

7. The President, at his discretion, may at any time consult the Board on any other subject affecting the College work.

8 The minutes of each meeting will be recorded by the Secretary, and read and confirmed at the following meeting

STANDING ORDERS

OF THE

Thomason College of Civil Engineering, Roorkee, 1939-40

and till further notice.

General rules.

Each student upon admission to the College must make himself familiar with the following orders, and in case of any breach of these orders, the plea of ignorance will not be entertained

1 Students, on arrival, will report as follows —

All students of the Civil Engineer Class, to the Personal Assistant to the Principal, other students, to the Superintendents of Overseer Class Hostels, who will allot them quarters.

2 Each student will be responsible for the state of the quarters allotted to him, and will be charged for the repair of any damage which they may sustain beyond fair and unavoidable wear and tear Accidental injury or disrepair should be immediately brought to the notice of the Hostel Superintendent concerned with a view to its rectification All students must vacate College quarters during the long vacation

3 No visitors, other than students of the class to which the occupier belongs, are to enter students' quarters without the sanction of the Personal Assistant to the Principal

4 Furniture, at a nominal rent, will, as far as possible, be provided for students of the Civil Engineer Class for use in the hostels, and damage to the same will be assessed by the

Personal Assistant to the Principal Such furniture is not to be removed from the rooms, or used for any other purpose without permission Special furniture will be provided for the various camps Students of classes, other than the Civil Engineer Class, will make their own arrangements for furniture

5. All students have to engage their own servants and immediately upon appointment have to report the names of same on the correct form—obtainable from the College office—to the Personal Assistant to the Principal The Personal Assistant maintains a black list of servants, and if any student has appointed a servant whose name is on the black list, the student will have to dismiss such servant at once and appoint another following the same procedure Without the Principal's sanction no unauthorized persons, servants or guests will be permitted to reside in the hostels or servants' quarters or to enter them after nightfall The wages of private servants must be paid by the 10th of each month following that for which they are due Students are required to take a receipt for every payment made by them to their servants, whether such payments relate to wages or other accounts

6 All information regarding text books, courses of study, dates of examinations, attendances, etc will be found in the College Calendar and pamphlets of the courses of study and syllabi of the various classes

7. Students are reminded that this is a College for young men and not a school for boys Though all needful assistance will be given to those really anxious to work, it is entirely on their own exertions that their success must depend, and in cases of failure they will only have themselves to blame They are, however, specially warned against idleness

in their first year under the expectation that they can pick up in the second or third The course is so laid out, that continuous application is required the whole time Students are reminded that if they fail to make sufficient progress in their studies, or fail to pay all College dues* on demand, they are liable to be suspended or removed from the College at any time

The guardian of any student so suspended or removed will be held responsible for the payment of any debts whatsoever, which may have been contracted while the student was in the College Although every precaution is taken to prevent students from running into debt, the College authorities are in no way to be considered responsible for such debt.

8 All students will attend the College regularly for studies at the hours laid down in the time tables, and for outdoor duties at the times prescribed by the Officer in charge of their class or their Professors Lecturers or Instructors *No student may be absent from his quarters in the College lines without leave after 9 p m during the first term of any session, and 10 p m during the second term of any session, or before sunrise* The punishment for breaking this rule will be of the severest description To enable the authorities to check this rule no doors should be locked at the times specified

* NOTE —The words College Dues include—

(i) College fee
(ii) Rent and conservancy
(iii) Rent of College furniture
(iv) Electric light charges
(v) Recreation fund subscription and cost of articles purchased from recreation stores
(vi) All dues in connexion with Engineer Class Club
(vii) All dues of College Dairy, College shoe maker College shop keeper, College tailor, College sweet seller and College stores
(viii) All dues in connexion with common Civil Engineer class Mess

Personal Assistant to the Principal Such furniture is not to be removed from the rooms, or used for any other purpose without permission. Special furniture will be provided for the various camps Students of classes, other than the Civil Engineer Class, will make their own arrangements for furniture

5. All students have to engage their own servants and immediately upon appointment have to report the names of same on the correct form—obtainable from the College office—to the Personal Assistant to the Principal. The Personal Assistant maintains a black list of servants, and if any student has appointed a servant whose name is on the black list, the student will have to dismiss such servant at once and appoint another following the same procedure Without the Principal's sanction no unauthorized persons, servants or guests will be permitted to reside in the hostels or servants' quarters or to enter them after nightfall The wages of private servants must be paid by the 10th of each month following that for which they are due Students are required to take a receipt for every payment made by them to their servants, whether such payments relate to wages or other accounts

6 All information regarding text books, courses of study, dates of examinations, attendances, etc. will be found in the College Calendar and pamphlets of the courses of study and syllabi of the various classes

7. Students are reminded that this is a College for young men and not a school for boys Though all needful assistance will be given to those really anxious to work, it is entirely on their own exertions that their success must depend; and in cases of failure, they will only have themselves to blame They are, however, specially warned against idleness

in their first year under the expectation that they can pick up in the second or third The course is so laid out, that continuous application is required the whole time Students are reminded that if they fail to make sufficient progress in their studies, or fail to pay all College dues* on demand, they are liable to be suspended or removed from the College at any time

The guardian of any student so suspended or removed will be held responsible for the payment of any debts whatsoever, which may have been contracted while the student was in the College Although every precaution is taken to prevent students from running into debt, the College *authorities are in no way to be considered responsible for* such debt

8 All students will attend the College regularly for studies at the hours laid down in the time tables, and for out door duties at the times prescribed by the Officer in charge of their class or their Professors Lecturers or Instructors *No student may be absent from his quarters in the College lines without leave after* 9 *p m during the first term of any session, and* 10 *p m during the second term of any session, or before sunrise* The punishment for breaking this rule will be of the severest description To enable the authorities to check this rule no doors should be locked at the times specified

* NOTE —The words College Dues include—

(i) College fee
(ii) Rent and conservancy
(iii) Rent of College furniture
(iv) Electric light charges
(v) Recreation fund subscription and cost of articles pur

([illegible] College
er and

(viii) All dues in connexion with common Civil Engineer class Mess

above Students are permitted to sleep immediately outside, and in front of, their quarters during the hot weather

9 All smoking, spitting, whistling or making any loud noise in the College classrooms, lecture theatres, laboratories or corridors, etc , is strictly prohibited Students should be careful to do nothing which may interrupt, or distract others at work

10 No debts, other than College dues (see note under paragraph 7) are allowed to be contracted Students are strictly cautioned against all irregularities in money matters Flagrant cases, which tend to bring discredit on the College, are liable to result in severe penalties being imposed upon offending students

11 All dues from students, recoverable by the College, whether payable to Government or to private funds, persons or bodies, must, for every month, be punctually discharged in full before the 21st of that month, failing which the students will be fined marks, suspended or removed at the discretion of the Principal

12 The Principal and the Officers in charge of classes will always be glad to give any help and advice in their power, and students are earnestly requested to apply to one or the other in any case where they are in doubt as to the right course before taking action Students should consult the Officers in-charge of their classes for advice before referring the case to the Principal, see order No 14

13 Any case of personal violence by one student to an other, or by a student to any other person, will be punished severely A student is never to take the law into his own hands, but is to report any grievance direct to the Officer-in-charge of his class for enquiry

14. Students wishing to see the Principal should apply for permission through the Officer in-charge of their class Direct application to the Principal is contrary to orders *Petitions signed by a number of students are not allowed* Any matter affecting a class, or a number of students, should be brought to notice by the senior student concerned

15 Students are strongly recommended to take a fair amount of bodily exercise regularly, too much poring over books is very apt to muddle the brain, and the active duties of the Engineering profession require a man to be as well trained physically as mentally to enable him to discharge them properly Marks are allotted for games, etc

16 The Library is open daily at the hours specified in the Library rules Students are invited to avail themselves of it The periodicals and papers placed on the Reading Room tables for general use are not to be removed from the rooms Loud talking in the Library or Reading Rooms is strictly prohibited

17 *Students are forbidden even though possessing a licence, to bring firearms into their quarters* Firearms may, with the permission of the Principal be stored in the College armoury No student is to bring any firearms to the College without first obtaining the Principal's permission

18 Students may keep dogs but they must not be left loose if unattended Dogs must invariably be chained up at night All dogs must be registered and numbered in a register kept by the Personal Assistant to the Principal and must wear a collar and a special badge Any dog found within the lines without a collar and badge is liable to be shot The Personal Assistant will supply the necessary badges on payment These badges may be returned at any time when not needed, and payment will be refunded

19 Dancing, singing parties, and the playing of musical instruments in the open are not allowed without the special sanction of the Principal in every case

20 Students are warned to be very careful to have their quarters securely locked when they are absent from them or when sleeping outside during the hot weather Any case of theft either of the property of a student or of Government must be reported immediately to the Personal Assistant to the Principal The Personal Assistant to the Principal will at once request the police to take prompt action He will inform the Officer in charge of the class concerned at the first opportunity during College hours or earlier if he considers it to be necessary

21 All students are expected at all times to be dressed in a neat and tidy manner, whether in or out of class, and must not appear in class in flannels or shorts used for games etc, without special permission There will be no objection to students wearing khaki shorts and long stockings during the summer, viz from April 1

22 Students should bear in mind that this is a competitive College and that any means tending to give any one student an unfair advantage must render the competition unequal and in time reduce the value of diplomas and certificates granted and affect the good name of the College For any breach of this rule severe action will be taken probably expulsion

23 Private servants are not allowed to enter the classrooms Drawing boards, etc, should be taken from, and made over to servants in the verandah by the student to whom they belong Private servants are not allowed to loiter in the verandahs of the College and students are expected to see that this rule is enforced

24 Students must occupy seats at the numbered tables in the order of their standing in the class Particular care should be taken not to splash ink on the tables, walls or floors, or to deface the furniture of classrooms and lecture-rooms in any way by writing or cutting

25 Students wishing to have baggage or parcels brought to the College from the Railway Station should give notice to the Personal Assistant to the Principal before 2 p m on the day the goods arrive This notice should be in writing, giving the number of their quarters, and a detail of the baggage or parcel The railway receipt, signed, and the amount due for railway carriage, should be sent with the notice

26 All students, on meeting the Principal, or any member of the staff of the College, will salute them in a respectful manner All students will address members of the College teaching staff Europeans and Indians, as "Sir"

27 In any class the student standing first in order of merit will be the senior The senior of a class is responsible for reporting promptly to the Officer in charge of his class any unusual occurrences or circumstances connected with his class He will take charge of survey parties and arrange all details in camps

28 Fruit on trees on the College Estate is not to be plucked by students or their servants

29 *Two guest rooms* one for the *Civil* Engineer and the other for the Overseer Class are available for the use of the relatives of students on application to the Personal Assistant to the Principal who will be glad to help students in accommodating any relatives provided reasonable timely notice is given to him

30 Students are not allowed to be members of outside societies, nor are they allowed to join in discussions on public matters except such as are organized by the Officers-in-charge of their class

31 Students are expressly forbidden to approach examiners, whether internal or external, with enquiries concerning marks, either prior to or subsequent to publication After publication should any student think some error has been made, he is to submit an application in writing to the Principal on the matter through the Officer in-charge of his class Any student not observing this rule will be punished severely, probably with expulsion

32 Students will not be permitted to appear for any external examination during their College course except to complete a university examination incompleted through sickness prior to their admission

33 The attendance of all students at the annual College Sports and Regatta is compulsory

34 There are the following shops generally on the College Estate —

(i) Banya's, (ii) Tailor's, (iii) Shoemaker's, (iv) Sweetmeat seller's as well as a General stores Bakery, Aerated water, Dairy These have been established for the benefit of the students and under the strict supervision of the College authorities Students are requested, in their own interests, to patronise these in preference to others

Leave.

35 (i) No student is allowed to leave the station without first obtaining written sanction All applications for leave must be submitted on the correct "Leave application" forms,

NOTE —For purposes of this order Saharanpur and Lhaksar may be taken as within the station '

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Sickness.

36 (i) The College Medical Officer will attend at the College Hospital at the following times —

(i) 1st half session October 16 to February 14	Daily 7 30 a m to 8 30 a m
(ii) 2nd half session February 15 to July 14	Daily 7 a m to 8 a m
(iii) Vacation July 15 to October 15	Daily 7 a m to 8 a m

The College Hospital Compounder will attend at the College Hospital daily throughout the year from 7 a m to 12 noon and in addition during the—

(i) 1st half session	Daily 5 p m to 6 p.m
(ii) 2nd half session and vacation	Daily 5 30 p m to 6 30 p m

The College Medical Officer as soon as possible after his hours of attendance will submit his daily sick reports as follows —

(i) One to the Principal reporting *all* who are sick

(ii) One to the Officer in charge of the Civil Engineer class reporting only those Civil Engineer students who are sick

(iii) One to the Headmaster Overseer class, reporting only those Overseer class students who are sick

(iv) One to the Officer in charge Physical training when the same is going on, including only names of Civil Engineer and Overseer class students who are sick or are exempted from Physical training

36 (ii) (*a*) All students who require medical attendance are to present themselves at the College H[illegible] during the hours of attendance of the College M[illegible]

(*b*) Those who are too ill to attend [illegible] nd notice to the College Medical Officer at [illegible] tal during his hours of attendance when the [illegible] will visit them at [illegible] quarters

before submitting his "leave application" form to the Officer-in-charge of his class must obtain on same the initials of the members of the staff concerned with the College class attendance periods or compulsory College functions The initials of these members of the staff will signify approval to the grant of the leave, unless they note otherwise

35 (iii) Students are warned that absence without leave is a serious breach of rules. At the commencement of any College attendance period the senior student present will at once report to the member of the staff taking such period the absence or sickness of any student

35 (iv) To obtain leave and proceed on short leave, and then to ask for an extension, *except on the most urgent grounds*, is a practice considered highly objectionable in Government service and the College authorities take the same view The mere dispatch of an application for extension is no excuse for failure to return on the proper date A sanction to the extension by the Principal is necessary, and to obtain this, each application should be accompanied by a stamped addressed envelope and all telegrams are to be prepaid These should be dispatched to the Principal early enough for the applicant to receive a reply in time *If no reply is received the application for extension should be considered as refused* Students who, being on leave, fail to return to the College on the day on which the leave expires without receiving sanction to an extension, will be considered guilty of disobedience of orders and will be punished accordingly

35 (v) Students are not required to apply for leave to enjoy sanctioned holidays in the Station or for the Vacation out of the station No leave will be given to attend the weddings of relatives

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(iv) One to the Officer in charge Physical training when the same is going on including only names of Civil Engineer and Overseer class students who are sick or are exempted from Physica training

36 (ii) (*a*) All students who require medical attendance are to present *themselves at the College Hospital during the* hours of attendance of the College Medical Officer

(*b*) Those who are too ill to attend personally are to send notice to the College Medical Officer at the College Hospit during his hours of attendance when the Medical Officer visit them at their quarters

(c) Those who fall ill either before or after the hours of attendance of the College Medical Officer are to report themselves to the College Hospital and to see the Compounder They are then to carry out the instructions given them by the Compounder, who is to report all such cases to the Medical Officer when next in attendance The Medical Officer will keep in attendance at the College Hospital a peon at all hours when the Compounder is not present, whose duty it will be to call the Compounder from his quarters

(d) If a student be compelled to absent himself from class attendance on account of illness or if during College hours obtains permission to leave for the same reason, he is to report at once to the College Hospital [*vide* section (c) above]

(e) In really serious cases the students will send notice to the College Hospital and it will be the duty of the Compounder to at once send for the Medical Officer, and when the Compounder is off duty, he is to arrange for a peon to be left at the College Hospital who can either call the Compounder or the Medical Officer, as the case may be The Medical Officer's address is the Roorkee Civil Hospital

36 (iii) A student placed on the sick list will remain on the sick list till taken off by the Medical Officer He will report daily at the Hospital at the specified hour while on the sick list, unless specially exempted by that Officer Students on the sick list excused from work or attendance at College are not permitted to leave their quarters, except for medical purposes, without the written authority of the Medical *Officer, initialed by the Principal On the written application* of the Medical Officer, the Personal Assistant to the Principal is authorized to erect a necessary tent near the quarters of any sick student

36(iv) Students who have been frequently sick during the year will lose marks for physical fitness

36 (v). All Indian servants belonging to the College or to students, who require *medical treatment, should attend at the* Hospital during the authorized hours

36 (vi) No student may be treated privately All cases of sickness must be reported and entered on the Sick report Any student concealing a case of sickness will be severely punished

36 (vii) The College Medical Officer will visit the hostels, cook houses, latrines and grounds once a week, as also the dairy and shops, to see that the sanitary arrangements, etc, are properly carried out, and will send a report every Monday morning to the Principal concerning any defects he may observe, or any improvements that he may wish to suggest

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Examinations.

37 (i) *The work given in by students at examinations, projects or at any time during the course is accepted as their own honest and unaided work* any attempt to deceive the Staff about it in any way whatever will on detection, be *punished by immediate expulsion No excuse whatever will* be accepted

37 (ii) Any student not present at any examination from whatever cause will lose all marks for the same

37 (iii) Appraising the answers to an examination is a very tedious and difficult matter, and each slovenly set of answers wastes time and temper, and causes all to suffer The following rules which are really in favour of good, honest and neat work will be strictly enforced, and marks deducted in each case in which they are infringed or not acted up to —

(a) Carefully read and minutely adhere to the instructions printed on the cover of the answer books

issued to students These instructions are as follows —

(i) Number your answers to correspond with the numbers of the questions, and if the question is divided into sub heads, be careful to number these

(ii) No part of this book is to be torn off

(iii) The whole of the work including all rough work, is to be written in this book

(iv) No writing whatever is allowed on any other paper except squared paper when required for an answer Each sheet of squared paper must be headed as required under regulation (A) or (B) of the answer book

(v) The paper should be ruled, or folded so as to make a margin on the left hand side

(vi) The handwriting should be distinct

(vii) Only one side of the paper is to be written upon The odd numbered pages, starting with page 3 are to be used for answers and the even numbered pages may be used for rough work, if required

(viii) In the event of this book becoming filled up, another book must be used and the number used written below There is a tendency amongst students to waste their own and the examiner's time by writing unnecessarily lengthy answers, by needless repetition and by using a large number of answer books It should seldom be necessary to use more than one answer book All answers should be as concise as possible, and, if sufficient thought is exercised before the answer is committed

to paper, all repetition can be avoided. Careless and lengthy answers will entail a loss of marks

(ix) These books are not to be folded but forwarded flat and if more than one book is used by the same student the second and succeeding books must be *tagged with the first*

(x) Students with roll numbers using this book are not to make any allusion to their names or initials, or to make any marks by which they may be identified.

(xi) The index on the inside of the cover of this book must be carefully filled in Students must fill in against each question attempted the word "answered" In the case of questions having separate parts (*a*), (*b*), (*c*), each separate part attempted should be indexed as "answered" Nothing should be entered against questions which have not been attempted

(*b*) In sessional and final examinations each student will be given a roll number to use instead of his name This must be written in the right hand top corner of the cover of *each* book The number of each question must be written in the margin of each page

(*c*) The examiner will mark under three heads —

(i) Knowledge of the subject

(ii) Accuracy in working

(iii) Clearness of working and expression

It the student fails in (*c*) (iii), even though perfect in (*c*) (i) and (ii), he will lose marks He is bound to show clearly how he obtained his results, and the examiner has no time to waste marking slovenly work or roundabout methods.

Take a mathematical examination for example —

(i) Each process should be headed with a word or two of explanation

(ii) All work having to be done in the book, each step of calculation that cannot be done in the head must be done on the even numbered pages

(iii) All work known to be useless must be scored out

(iv) The answer must be plainly marked Write the word answer" opposite the answer in each case thus Ans —

(d) Students must bring their own pens, inks, pencils and drawing instruments The use of slide rules may be permitted at the discretion of the examiner No borrowing from each other is allowed during an examination

(e) No books or papers of any sort are to be brought into the examination room Logarithm table graph and drawing paper when necessary, will be provided

(f) No student may leave his seat for any reason except to quit the room After having once left the room for any reason whatever, he cannot return A student wanting another book will call an attendant who will bring it to him

(g) When time is up the examiner will call out, "cease writing,' after which order, pen must not be put to paper for any purpose whatever

(h) The use of red ink or of coloured pencils should be avoided as far as possible, as the Examiner usually makes corrections in coloured pencil

Project Regulations (including Tours).

Notes for the guidance of students in drawing up Projects

38 (i) *The collaboration of students during Projects is forbidden and in this connexion attention is expressly drawn to Standing Order No* 37 (i), *and to the penalty for its infringement It must be remembered that Projects are competitive examinations subject to the ordinary examination rules Students are warned that they are allowed to obtain assistance solely from* (a) *technical books in general,* (b) *plans and models in the Model Room and Library and* (c) *plans of any existing engineering work which they may obtain from a source which is equally open to other students of their year* *

It is forbidden to obtain survey maps or level charts from outside sources, or any assistance in designing or calculating from outside the College Students are not permitted to obtain previous engineering projects executed by past students for the purpose of assisting them in their work Finally, in the absence of specific project regulations, the best guide to a student's conduct is his own sense of honour

38 (ii) A project is expected to be a piece of work such that a senior officer can examine criticize pass orders on it, and hand it over for execution To ensure this result it must be complete in every sense It must include a clear concise report with *cross references* to all drawings, a survey which can be checked with ease and celerity, and drawings from which work or working drawings can be produced and from which the estimate can be checked The drawings must be neat but should have no unnecessary elaboration Calculations should be given for all important structural items A student must carefully think out his work Having gone over the ground he should scheme out his survey To ensure that

* *Vide* Standing Order No 2? such plans etc. should in any case shown to the Professor of Civil Engineering I

he has time to submit all necessary work, all work in the field must be done neatly and methodically.

38 (iii) Having completed the field work the student is required to complete his project in the College Work on drawings in quarters is not permitted, but this does not prevent a student from thinking out his designs, and making sketches and calculations in his spare time He must again map out a methodical scheme if he is to submit a complete project Every drawing should be numbered, with a heading showing what it represents A scale should be shown on each drawing and sufficient dimensions should be given both for the estimate and for actual work References to conventional signs need only be shown on one sheet for the whole project

38 (iv) Above all, the student should endeavour to show a sense of proportion as regards the relative importance of the various portions of his work The whole of such details as galvanized or tiled roofs, railings, gateways, etc, should be drawn sufficiently to show the style proposed All calculations for applied mechanics should be fastened together and full references given in the text to all drawings All details necessary to check the calculations should be given All calculations referring to a particular design should run concurrently, and be prefaced by a clear statement of the data connected with that design. No calculations should be shown on the drawings, but magnitudes of the forces represented should be clearly shown No marks will be allotted for applied mechanics drawings which are not accompanied by calculations in the report The important details in drawing the finished survey, estimate, calculations and report should all be completed first Cross references and headings should be carefully given so that it may be easy to follow from the report or estimate to what reference is being made Any leisure

time can then, if desired, be devoted to type drawings of well-known details and to generally beautifying, cleaning and elaborating the drawings The cleaning of drawings by servants or menials is forbidden

38(v) The senior student is responsible for the discipline of the camp He will at once report any authenticated case of a breach of the camp regulations, and pending the arrival of instructions from the Officer-in charge of the class, he is empowered to issue such instructions to students or to khalasies as he may consider necessary

38 (vi) Until a student has finally completed his field work in camp he is not permitted to visit Roorkee unless specially authorized to do so by the Officer-in charge of the class. If a student, on account of absolutely imperative circumstances, desires to visit Roorkee on leave from the project camp, he must submit a written application on a leave application form for leave at least 24 hours before he desires to quit the camp, and he is not authorized to proceed on leave until he has received the necessary permission Such leave will only be granted in very exceptional cases and on receipt of conclusive evidence that it is absolutely necessary

38 (vii) Students in camp are not compelled to work on Sundays or on general College holidays, but they are allowed to do so No extension of time in camp or in College will be given to such students as observe these holidays

38 (viii) No work, however, is permitted in the College rooms on Sundays after the return from camp, though such days may be utilized for work which is permitted in quarters

38 (ix) All students while in camp, are to keep a diary showing each day the hour of leaving camp and the hour of return, the nature and extent of the survey or other work executed, giving the names of any villages or other prominent points visited, and any other concise information [illegible]

to an examiner in checking the progress of the work *The diary must always be on the person of the student* so that it can be produced at once when demanded, and it must be kept up to date and must be written in ink

38 (x) Students should leave camp for work not later than 8 0 a m daily

38 (xi) Every endeavour should be made to avoid giving offence to villagers near the camp or elsewhere by needless destruction of crops or by other damage Pea fowl must not be shot without permission of the local villagers

38 (xii) Every camping ground is to be kept clean The second senior student will be responsible for the supervision of sanitation under the direction of the senior student Paper etc must not be left lying about Fires are not to be lighted inside the limits of the camp or near tents Tins of oil are not to be kept in Government tents Lamps must not be placed on tables where there is a danger of the tent catching fire Before a storm all lamps must be extinguished

38(xiii) Necessary tents should be located on the side of the camp away from the direction from which the prevailing wind blows and should be if possible 100 yards or more from the camp

38 (xiv) The purity of the water supply for drinking and cooking should be carefully ensured Drinking water should be boiled before use The washing of clothes should not be permitted near a well from which the supply of drinking water is drawn and in the case of stream the washing of clothes must take place down stream of the drinking water site

38 (xv) After return to the College all students have to work in the College on the preparation of the project during the hours ordered from time to time Permission for exemption has to be obtained from the Officer in-charge of the class

38 (xvi). Students will be responsible for their drawings and original survey records which are, on no account, to be taken to their quarters, but which must be kept filed in their classroom in the almirahs set aside for this purpose The issuing officer will stamp all paper issued and on each sheet the student to whom it is issued must immediately enter his roll number

38 (xvii) Government tents are classified as follows .—

E P tents to accommodate four students	Class I
Semi-Swiss Cottage, large, two students	Class II.
,, ,, ,, small, one student	Class III

Shuldaries, large, to accommodate not less than 15 khalassies

Shuldaries, small, to accommodate not less than 8 khalassies

As the majority of the class consists of Indians, they will be accommodated in batches of 4 in each E P tent If there are 3 Mohamedans they will occupy one E P tent, but 2 Mohamedans will be accommodated in a Class II tent

For example, if the class consists of —

Case I —13 Hindus and 3 Mohamedans Then the tents will be allotted as follows —3 tents Class I, 1 tent Class III for the Hindus, and 1 tent Class I for the Mohamedans

Case II —14 Hindus and 2 Mohamedans 3 tents Class I and 2 tents Class II

In the case of Europeans tents of Classes II and III will be available according to the above scale

There will be one E P tent, with drugget, for the Engineer Class Club, and one single pole tent, each with drugget, for the European and Mohamedan messes, provided that each has three or more members

Necessary tents are for Indians only

Furniture—Each student will be allowed 1 bed 1 mattress 1 folding chair and 1 folding table (the latter two being camp furniture) Club and Mess tents will have collapsible tables

38 (xviii) Two dak coolies for the camp, one of whom will report daily to the senior student will be allowed, provided the camp is within a 15 mile limit and three dak coolies for a 20 mile limit

38 (xix) An allowance of Re 1 per mile for the survey is sanctioned to each student for the cost of flags pegs, etc subject to a maximum of Rs 10 No other contingent charges are admissible and this also includes such items as stationery portfolios etc

38 (xx) Students who are unable to finance themselves can on applying in writing to the Principal receive an advance up to Rs 50 for payment to khalassies This sum will be deducted from the total of the bill on the close of the project The success with which students manage their coolies and make their camping arrangements will be considered in awarding marks for Fitness for Department

38 (xxi) Instruments as required will be issued to each student each instrument bearing the class number of the student The student will be personally responsible for these instruments being in adjustment and in good working order Any damage sustained will be made good by the student and he will not be permitted to exchange his instrument or stand with another student and no student will be permitted to lend out his instrument The damaged instrument with a report must be sent immediately to headquarters

Students will always accompany their khalassies proceeding to and returning from work In inclement weather instruments should be put away in their boxes and the boxes protected from rain, sun and dust When an instrument is kept

standing for some time in the sun, the cloth bag should be placed over it for protection Level staves should be clamped together when not in use, and they should not be leant against walls and trees, but placed horizontally on the ground and protected from dew, rain and white-ants

38 (xxii) Except level staves, plane-table stands and chains, no instrument should be carried on carts The khalassies *must* be utilized for conveying such instruments to the field and back to headquarters Plane-tables may be placed face to face and taken in a spring cart, but this only when the student himself is travelling with them

38 (xxiii) The boundaries of all fields must be surveyed, provided they come within the specified limits of the alignment, submerged area, etc Village boundaries must also be defined, these are usually shown on the guide map or index map issued Traverse work and triangulation must be based on true north, and the magnetic variation at the time should be clearly noted on each map and drawing Every use should be made of embedded stones, plinths of building, etc , as bench marks in levelling, even if such objects are to some extent without the limits of the work

38 (xxiv) Plane-table sections, note-books, etc , must have the roll number of the students clearly written on them. All plane table sections and records must be kept up to date in ink, and index and cross reference work should be made in the field Level and traverse field books must be recorded in ink in the field.

38 (xxv) If a chain be used, the chain should be checked daily and the chain error noted in the field book Levels should be tested for adjustment daily.

38 (xxvi) All calculations for curves, azimuths, etc , should be contained in the survey note book.

38 (xxvii) Students will see that as little damage as possible is inflicted on standing crops, and if chaining be necessary through such crops, the chain should be lifted, not *dragged*, from arrow to arrow The instrument should be set up as near as possible to the line of demarcation between fields to avoid repeated trampling down of wheat, gram, etc

38 (xxviii) Khalassies will be enlisted at Roorkee, and they will be entitled ordinarily to one day's leave per week, if the project be within 12 miles of Roorkee, or two days in a fortnight if beyond this limit The day or days for leave is one for the student to arrange Khalassies will receive pay at the prevailing rates for labour and tindals (one per squad of 4 men) will, if recommended receive pay at the rate of Re 1 extra per mensem Each khalassie can obtain a record sheet which will entitle him to prior claim for enlistment for both the triangulation and project camps A tindal on a higher rate of pay loses claim to the extra allowance if he absents himself from any of the above camps. Khalassies will after engagement, receive an advance of Rs 2 and will after the advance has been paid, work in arrears of pay and obtain other advances against the final payment A student engaged on independent work will, if circumstances allow have a squad of 4 men He will not be permitted to work with more

38 (xxix) Civil Engineer and Overseer class students of the Thomason College of Civil Engineering, Roorkee, when proceeding on tours in connexion with project work or to visit works of interests are entitled to travelling allowance at the following rates —

A—Civil Engineer class students—

(i) Railway fare at single intermediate concessional rates applicable to students travelling in parties

and when such rates are not available then a single intermediate class fare for each student

(ii) Actual expenses for road journeys to the limit of mileage allowance admissible to officers of third class, viz annas two per mile

(iii) Rupee one per night per student if detained in a town while on tour

(iv) Single third class railway fare for rail journeys and one anna per mile for road journeys for each servant at the rate of one servant for every five students and subject to a limit of four servants for a party of over 15 students

B—Overseer class student—

(i) Single fare of the third class for journeys by rail and one anna per mile for journeys by road

(ii) Daily allowance at the rate of eight annas for halts outside headquarters

Students when not accompanied by a member of the College staff will be under the charge of the senior student

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Workshop Rules

39 (i) Every student attending the Workshop course will be allotted a special number On entering the shop he will be given a corresponding ticket He will make the ticket over to the Foreman Instructor when taking his tools and receive it back when he has returned them correct at the close of the period Upon completion of the period each student will check with and hand over to the Foreman all tools When leaving the Workshops each student will give up his ticket at the gate

39 (ii). Breakages and injuries to tools, machines and Government property generally must, in all cases, be reported at once to the Lecturer in charge

39 (iii) Materials for instructional work will be issued to students by the Foreman with instructions regarding the work to be done On completion of the work it must be shown to the Lecturer and approved before a more advanced exercise can be given

39 (iv) Students are prohibited from working on any machine, unless especially authorized in this respect by the Lecturer in charge or the Foreman of the shop

39 (v) Loose clothing and *puggries* may not be worn in the Workshops

39 (vi) Students must not enter any shop other than that in which their class is working without permission from the Lecturer in charge

Rules regarding student s independent work in the College Workshops

39 (vii) Every student wishing to do private work must first show to the Assistant Professor in charge a fully dimensioned sketch of the article he wishes to make If sanctioned by the Assistant Professor the job will be given a workshop number and material issued for it

39 (viii) All articles being made, and the materials issued must on no account be removed from the Workshop by students, but must be left in charge of the Shop Foreman; when any article is complete it must be handed over to the Assistant Professor and if satisfactory after examination by him, it will be issued to the student who made it

39 (ix) Private work must not be done during hours allotted to Workshop Practice

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Laboratory Rules

General

40 (i) The greatest care must be taken in handling and using all apparatus any breakage or damage which occurs must be reported at once to the Professor or Lecturer Any

damage or loss resulting from carelessness will be charged to the student or students responsible for it

40 (ii) After finishing any experiment, the student or students must replace in their proper positions all parts of the apparatus and reagent bottles used The whole apparatus is to be replaced in its case if there be one When using boxes of weights especial attention is drawn to this rule

40 (iii) When working, the benches, etc , must be kept as clean as possible, students being careful to avoid any unnecessary dirt or mess

40 (iv) Students must enter in a laboratory note-book, especially kept for the purpose, details of each experiment performed by them during or immediately after its completion Such rough notes must be recopied, kept up to date and be always ready for inspection when required In the Physical and Electrical Laboratories, after finishing an experiment, students must mark it off on the form put up in the laboratory for the purpose

40 (v) Students must do all experimental work entirely independently, all necessary explanations etc , will be given by the Professor or Lecturer Consultation between students is strictly forbidden during experimental work except when two or more students are ordered to conduct an experiment together

40 (vi) All apparatus, chemicals, etc , are supplied free to students, but any breakage or damage will be charged to the student or students responsible for it

Chemical Laboratory Rules

40 (vii) Each student must provide himself with a rough note book a piece of platinum wire, a duster, padlock and

and a copy of each of the prescribed text-books Keys of the padlocks should be labelled and left with the Lecturer.

40 (viii) Students should be careful not to waste chemicals, either by spilling them about, or by using unnecessarily large quantities

40 (ix) All experiments giving rise to poisonous or obnoxious fumes must be performed in the fume chambers.

40 (x) Students are advised, when heating either solids or liquids in test-tubes, to direct the mouths of the tubes towards the reagent shelves, in order to prevent any accident occurring to their neighbours

40 (xi) Students are on no account to touch the switches regulating the ventilation of the fume chambers

Laboratory Balance Room Rules.

40 (xii) Students, when weighing, should always place the article to be weighed on the scale pan on the *left*-hand side of the balance and the weights on the *right*-hand side.

40 (xiii). Chemicals are on no account to be placed directly upon the scale pans Chemicals to be weighed should be either put upon a watch-glass, or placed in a weighing bottle Everything to be weighed should be *scrupulously clean and perfectly dry*

40 (xiv) When weighing, the balance pans should be *slowly* and *carefully* released The weights are *never* to be placed upon the scale pan while the balance pans are free to swing

40 (xv) The weights are *on no account* to be touched with the fingers but should be removed by means of the callipers furnished with each box of weights

40 (xvi) During the process of weighing the weights are to be removed, one by one, from the weight-box and *carefully* placed upon the balance pan Weights must not be placed upon the top of each other.

40 (xvii). Check the result of each weighing by adding together the weights removed from the weight-box, then carefully remove weights from the balance pan

40 (xviii) All results must be carefully recorded in a note book and not on scraps of paper which are liable to be lost.

40 (xix) Students, when they have finished weighing, should remove the rider from the beam of the balance, see that the balance pans are not free to swing, close the balance replace the balance cover, and see that all the weights are correctly placed in the weight-box

40 (xx). Hot crucibles are *on no account* to be put upon the balance pans Crucibles should be allowed to cool in a desiccator

40 (xxi) Apparatus should *not* be left upon the balance tables

40 (xxii) Should any of the balances be defective, the matter should be reported *at once* to the Professor or Lecturer.

Engineering Laboratory Rules

40 (xxiii) The accuracy of the machines and instruments, depending chiefly upon their correct adjustment students are forbidden to tamper with them in any way

40 (xxiv) Steam valves must never be opened except in the presence of a member of the staff Serious accidents have happened in the past through non observance of this rule

40 (xxv) Reports of tests will be submitted on the day following that on which the tests were made The report, with any corrections, will be returned to the student, after checking, on the student's next attendance at the laboratory

Survey Laboratory Rules

40 (xxvi). The greatest care must be taken in handling and using all survey instruments Any breakage or damage

which occurs must be reported at once to the Assistant Professor or Lecturer A student is personally responsible for any instrument issued to him, and when kept by him in his quarters he should see that it is put in a safe place and not where it is likely to be knocked over by his servant in cleaning the room No instrument should be left unattended in the field In going to or returning from work in the field *students (except Civil Engineer Class, 3rd Year) must on no account, hand their instruments over to servants to carry* Any damage done to an instrument must be made good by the student to whom the instrument was issued and in the case where students are working in parties the cost will be divided among the members of the party, unless it can be shown clearly that one or other of the party was directly responsible for the damage done In addition to having to pay for the damage caused, the student or students will have marks deducted either from their ' Fitness for department or Survey groups or from both

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College office

41 (i) Students are strictly prohibited from entering the College office rooms Any work which they may have with the office should be transacted over the counters

41 (ii) A bill for all College dues will be sent to all the students before the time fixed for payment of such dues every month

41 (iii) All payments must be made by students in person at the counter of the College treasury between the hours of 11 a m to 3 p m on the days as may be ordered Cheques will not be accepted

The College cashier will grant a receipt for the amount paid

As far as possible the students must bring the exact amount due, to avoid any delay in transactions at the counter

Central Library Rules.

General

42 (i) The Library is maintained for the use of the Staff and students of the College It is also available to Gazetted Government officers resident in Roorkee, and, under restrictions, to the general public resident in Roorkee Books are issued for reference purposes and on loan in accordance with these rules

42 (ii) Certain works of reference can only be consulted in the Library and Reading-rooms, and may not be removed from these rooms without the sanction of the Principal

42 (iii) No book will be issued on loan from the Library until a signed receipt for the same has been handed to the Librarian; this receipt will be returned when the book is given back

42 (iv) Books are liable to be recalled at any time by the Librarian A new book may only be kept for 7 days The term "new book" is one which has been received within six months of the date of issue

42 (v) The transfer of books on loan to any other person is prohibited

42 (vi) **Persons making use of the Library are forbidden to remove books from the shelves** The Librarian on being informed of its catalogue number will supply any book required

42 (vii) The Library will be closed annually to the issue of books from approximately July 5 to 15 All books out on loan must be returned not later than July 5

42 (viii) Persons damaging or losing books will be charged with the full value of the same The practice of marking or scribbling in books is strictly prohibited

42 (ix) Persons infringing any Library rules are liable to be denied the use of the Library

42 (x) The Library is open daily during the College session Sundays and holidays excepted for the issue and return of books from 11 a m to 3 p m *During the vacation it is open on Thursdays only from 9 a m to 11 a m* The Reading rooms are open daily during the College session from 8 a m to 4 p m except on Sundays and holidays

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Special

College Educational Staff

42 (xi) A *special* issue of books for departmental use for periods not longer than one session is allowable to Professors and Heads of College departments provided the number so issued to any one department does not exceed twenty at any one time Such a special issue will require the sanction of the Principal Normally in order that students should be able to consult any technical book such books if taken out by any member of the Staff should be returned *within one month* except as in Rule 42 (iv) If the Professor is of opinion when he takes out the book that he will require the use of it for longer than one month he should put up an indent for a duplicate copy for the Central Library (chargeable to his laboratory grant) within one week of the issue of the book

42 (xii) All members of the Educational Staff are *entitled to keep books on loan to a limit of eight volumes*

42 (xiii) Applications for works already on loan will be registered by the Librarian and on return will be issued to the applicants in order of priority

42 (xiv) The members of the Educational Staff are exempted from Rule 42 (vi) and are permitted to remove books from the shelves but not from the Library without signing the usual form and depositing same with the Librarian

Students

42 (xv) Text books on sale at the Book Depot will not be issued to students

42 (xvi) Students are not permitted to retain any book for a period longer than 14 days except as in Rule 42 (iv) and 42 (xx) Re issues of any book after it has been returned will not be made to the same borrower until after the lapse of 7 days Students are entitled to keep books on loan up to the *limits for the different classes given below, but no book may be* retained for a period longer than fourteen days

Engineer class	5 vols
Overseer class and Draftsman class	3 vols

42 (xvii) Rule 42 (xiii) is also applicable to students for scientific works

42 (xviii) For the vacation books may be issued to students up to a limit of 3 only with the sanction of the Principal

42 (xix) Students borrowing books containing plates must personally check the number of plates and enter the actual number on the receipt The plates are to be checked again when the book is returned Books returned one day will not be re issued till 3 clear days have elapsed, except as in Rule 42 (xx) In order to obtain and return books students must attend in person

42 (xx) Students of all classes working on projects may only borrow 3 volumes at a time and are allowed to keep t

same for 3 clear days only Books returned one day may not be issued before the following day to these students

Residents

42 (xxi) Members of the general public resident in Roorkee may, with the approval of the Principal, borrow books The applications of non-commissioned officers and soldiers stationed in Roorkee should be submitted to the Principal through their Commanding Officer

42 (xxii) All residents of Roorkee entitled to use the Library under any of these rules may keep books on loan up to a limit of *six volumes*, no book being retained for a longer period than one month except as in Rule 42 (iv)

42 (xxiii) Residents about to leave the station, even for a short period must return all Library books

42 (xxiv) The term Members of the general public resident in Roorkee means a head of a family, and the term includes his family but not as separate residents

Non residents

42 (xxv) The Library, excluding works of fiction, is available to gazetted Government officers and other out station residents, in special cases on application to the Principal, at whose discretion a deposit may be required to cover the full value of the books borrowed

42 (xxvi) Those permitted to use the Library under Rule 42 (xxv) may keep books on loan up to a limit of six volumes, no book being retained for a longer period than two months The cost of packing and carriage by registered post both ways being defrayed by the borrower No "new book" will be issued

Thomasonian Society

43 (i) The aim is to cultivate the faculty of exact expression in speech and to provide for rational discussion of scientific technical engineering literary and social subjects

Also to arrange lectures on subjects of general interest by members of the College Staff or outsiders

43 (ii) There shall be no admission fee or subscription of any kind

All members of the Staff and students of the Civil Engineer class shall be members *ipso facto*

43 (iii) The Principal will nominate every session a member of the Staff to be the President who in consultation with the Principal shall have full control over the activities of the Society

43 (iv) The students will elect a Secretary at a general meeting to be held after the mid sessional examination every year He will keep a record of the activities of the Society and issue notices with the approval of the President for the various meetings

43 (v) A Vice President will be elected from among the 2nd year students at a general meeting to be held after the mid sessional examination every year He will assist the President and in his absence preside at meetings

43 (vi) The Secretary will arrange meetings with the approval of the President At least fourteen days notice should be given of each meeting

43 (vii) The debates shall be held in the premises of the Civil Engineer Class Students Club

43 (viii) The Lacey Prize of Rs 25 will be awarded annually to the student who is judged to have submitted the bes

paper and or has most clearly expressed himself in discussions The standard set will be high, and the prize will not be awarded unless work of real merit has been presented to the Society The judges will be the Principal and the President of the Thomasonian Society

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Rules for the management of the College Magazine

44 (i) The magazine will be called The Lion, Thomason College Magazine It will be under the control of a senior member of the Staff who will be called the 'Director and who will be appointed by the Principal every session

44 (ii) The Director will supervise its publication and control its finances

44 (iii) An Editor and an Assistant Editor will be appointed annually before the College vacation by the Director in consultation with the Principal The Editor may be either of the 2nd or 3rd year Civil Engineer Class, and the Assistant Editor will be an Overseer Class student of the 1st or 2nd year

44 (iv) The new Editor and Assistant Editor will take up their duties with the second issue of the session following their appointment The names of the new Editor and Assistant Editor will be announced in the first issue of the session following their appointment

44 (v) There will be as many issues during the session as possible (up to a maximum of 5), depending on articles submitted and if funds permit

44 (vi) A compulsory subscription of annas four per mensem for each of the 9 months of each session from each Civil Engineer class student each Indian Commissioned officer and each Overseer class student

The above subscription will entitle each person named to one copy of each issue of the magazine Should any wish to purchase extra copies they may do so if there are sufficient copies at Re 1 2 per copy

44 (vii) The magazine will be kept on record in bound volumes in the College Library and in the students Clubs

44 (viii) From time to time copies of the magazine may be sent to distinguished old alumni of the College and to certain institutions for purposes of exchange A list of these will be sent to the College Office at the beginning of each session The College Office will distribute the magazine to the subscribers

44 (x) Writers of articles will be entitled to receive one extra copy free of charge More copies will be supplied to them on payment of actual cost

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College dairy

45 All students are to obtain milk and butter from the College Dairy and from no other source This Dairy is maintained for the good of their health and students are earnestly requested to see that their servants do not supply milk or butter from outside sources and by this means endanger the health and even risk the lives of students Any servant detected supplying milk or butter to students from outside sources will be expelled from the College Estate and students will be held responsible that their servants are informed of this fact Butter and milk will be paid for th the Dairy bills

Subscriptions to athletics and games.

46 Students of the Civil Engineer and Overseer classes have to pay the following donations and subscriptions —

(a) Civil Engineer Class

Compulsory Entrance fees

Civil Engineer Class Recreation Sports and Regatta fund Rs 15 upon first joining from each student

Subscriptions

Civil Engineer Class Recreation, Sports and Regatta fund Rs 7 per mensem for each of the 9 months of each session from each Civil Engineer Class student

(b) Overseer Class

Compulsory Entrance fees

Club and Recreation Fund Rs 3 upon first joining the College

Subscriptions

Club, Recreation and Boating Fund Rs 5 per mensem from each Overseer class student for each of the 9 months of each session of which Rs 3 will be credited to the Club and Recreation Fund and Rs 2 to the Boating Fund

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Rules of Civil Engineer Class Students' Club.

47 (i) No person other than students of the Civil Engineer class shall be eligible for ordinary membership Each Civil Engineer class student is compelled to join, and will have to abide by the rules and regulations in force at the time, or as may be altered thereafter A member guilty of a breach of the rules or of conduct unbecoming a member of the Club may be debarred from enjoyment of the Club privileges to the extent approved by the Principal on the recommendations of the President and the Executive Committee.

All qualified ex students may be invited to become honorary members of the Club, with the consent of the Principal

47 (ii) At the beginning of each session the Principal will nominate either himself or a member of the Senior Staff as President of the Club and another member of the Staff as Vice President

All affairs of the Club will be managed by an Executive Committee, the Chairman of which will be nominated by the Principal *from among the Third Year students* and eight honorary secretaries elected at a general meeting of the Club in the manner indicated below —

(a) General Secretary	Elected from 2nd* Year class members	Elected at the close of the previous College session
(b) News Secretary		
(c) Furniture Secretary		
(d) Garden Secretary	Elected from 2nd or 3rd* Year class members	
(e) Billiards and lighting Secretary		
(f) Music Secretary		
(g) Indoor Games Secretary	Elected from 1st Year class members	Elected as soon as possible after commencement of the College session
(h) Refreshment Secretary	Elected from any of the three classes	

A general meeting shall be called before the close of a College session to elect secretaries (*a*) (*b*) (*c*) (*d*) (*e*) and (*f*) for the ensuing College session The new secretaries will take over charge of their respective duties from the retiring secretaries together with the account books and all connected papers before the College vacation commences and report their having done so to the Vice President

Before the College vacation commences the retiring secretaries (*g*) and (*h*) shall hand over charge to the gener

*Denotes those members who will become 2nd and 3rd year members during the immediately ensuing College session

secretary for the ensuing College session appointed at the General Meeting together with all account books and all connected papers and report their having done so to the Vice-President

A general meeting shall be called as soon as possible after the commencement of a College session to elect secretaries (*g*) and (*h*) and to these newly-elected secretaries (*g*) and (*h*) the general secretary will hand over all the account books and connected papers which have been in his custody during the College vacation without delay and report his having done so to the Vice-President

47 (iii) The Club reserves the right to enforce an office on a member of the 2nd Year class at an election for this purpose, whenever an emergency arises for so doing.

47 (iv) During the temporary absence of any secretary from Roorkee he will arrange for his work to be carried out by some other member proposed by him and approved by the President

47 (v) At the general meeting held before the close of a College session at which certain new secretaries for the ensuing session are elected a Finance Committee shall be formed for preparing the annual budget This Committee will include —

(*a*) A chairman (elected from 3rd year class)

(*b*) Four members other than secretaries and elected from each class

(*c*) The General Secretary who will also act as Secretary of the Finance Committee

The Finance Committee will call upon the various new secretaries to submit their estimates of expenditure After examining these the Committee will frame the budget and will submit it to the Executive Committee for approval After approval has been given by the Committee the budget will be passed at the Annual General Meeting of the Club

47 (vi) Should circumstances warrant it, the Executive Committee may make subsequent minor changes in the budget to guard against over expenditure

47 (vii) One General Meeting which shall be called by the President as early as possible after the election of certain secretaries and before the close of the session shall be termed the annual general meeting Ordinary general meetings of the Club can be called by the Executive Committee after two days notice

A general meeting can also be called by one third of the members of the Club after four days notice in writing to the General Secretary The agenda for all general meetings must be posted at least forty eight hours prior to the meeting

Questions regarding the management and expenditure of the Club can be asked by any member if twenty four hours' notice is given to the General Secretary about them previous to a General Meeting subject to the approval of the President

A vote of no confidence can only be passed on any secretary if two thirds of the members of the Club desire to do so

At the Annual General Meeting and all general meetings either the President Vice President or Chairman of the Executive Committee will preside Strict order will be maintained by members present at the annual general meeting and ordinary general meetings Lack of discipline on the part of any member or members at any general meeting at which the President is not presiding shall be reported by the officer presiding to the President for necessary action

The minutes of all general meetings (both annual and ordinary) shall be recorded by the General Secretary as s

audited by the Finance Committee each quarter The audit report will then be considered by the Executive Committee, and the audited accounts for the whole year placed before the Annual General Meeting of the Club

The various secretaries shall also submit a detailed report of their work at this General Meeting

47 (xv) The Club premises will usually be open from 10 a m to 9 p m in the first half session and from 10 a m to 10 p m in the second half session but on Sundays and holidays the Club shall open from 8 a m and 7 a m respectively On special occasions the Club premises may be kept open after the aforesaid hours provided the Executive Committee has previously obtained the sanction of the Principal through the President unless he is the Principal, otherwise through the Vice President The Club premises will be closed during the College vacation and no member or honorary member shall have the right to use them during that period

47 (xvi) Members are expected to use the Club property with great care and not to remove from the Club premises anything which is not their private property

Any damage to Club property must be reported promptly to the Vice President by the General Secretary The member concerned shall pay for the damage such amount as is assessed by the Personal Assistant to the Principal upon intimation from the President or Vice President after the approval of the Principal has been obtained

An up to-date inventory of all the Club property shall be kept with the General Secretary and the departmental secretaries shall also keep a list of the property in their charge Copies of these lists will be put up on the notice board for a

week in the beginning of the session The proposals for new purchases together with an estimate of the cost of same are to be submitted to the President through the Vice President for counter-signature before any purchase is made A list of all such proposed new purchases is to be exhibited on the notice board from time to time

The secretaries should realize that they are servants of the Club and are not entitled to privileges other than those enjoyed by all the members of the Club In no circumstances must they use any Club property for their own private use Neither must Club servants be called upon to perform duties other than those connected with the Club Any such instances brought to the notice of the President will be dealt with by him in consultation with the Executive Committee In every case the action taken shall be reported to the Officer in charge Civil Engineer class

47 (xvii) A member may bring with him to the Club premises occasionally one or two gentlemen as his guests He will be responsible for his guests while they are in the Club premises

No guests will be allowed to be present at the General or Business meetings of the Club

On the occasion of any Club function invitations shall be issued only by the General Secretary after the list of invitations has been approved by the President Members desiring to invite any friends will send the names and addresses of these friends beforehand to the General Secretary who will submit all names to the President for approval

47 (xviii) The Club establishment will be regulated and controlled by the General Secretary under the orders of the Executive Committee

The Club premises will be properly looked after and kept clean and tidy under the supervision of the Garden and the General Secretaries Anything in the nature of repairs being required will be reported to the Personal Assistant to the Principal

The Personal Assistant to the Principal will report to the President any defect in cleanliness for necessary action

47 (xix) Instances of neglect or indiscipline on the part of any servant of the Club shall be brought at once to the notice of the General Secretary, who may recommend him to the President for such disciplinary measures as may be necessary

47 (xx) During the absence of members on duty in camp one or more of the Club servants as may be decided by the Executive Committee may accompany them to be in charge of the refreshments and indoor games at the camp If considered necessary by the Executive Committee temporary establishment may be engaged for the period of the camp, provided the budget allotment will cover the extra charge

47 (xxi) The billiard table can be used by members on the payment of the following charges Annas 2 per member for singles and anna 1 pies 6 per member for doubles per game lasting 25 minutes or part thereof, to be charged against those taking part in a game These charges will be realized through the College office each month

Any damage to the billiard table cloth shall be paid for at the minimum rate of Rs 5 per inch For the first cut the charge will be more the amount of which will be fixed by the President

Members are expected to abide by any other instructions regarding billiards issued by the Billiards Secretary, and approved by the President



Civil Engineer Common Mess

47 (xxii) Several indoor games can be played at present in the Club Gambling is definitely prohibited in the Club premises

47 (xxiii) Badminton and tenikoit are the only outdoor games provided by the Club at present and for these no extra charge is made

47 (xxiv) Members will vote for the newspapers and periodicals, which they desire for the Club on a list circulated by the News Secretary at the close of the College session The proposed list shall then be submitted to the Executive Committee and forwarded by the Chairman of the Executive Committee to the President for approval The order for foreign periodicals will be placed before the annual vacation begins

At the beginning of the College session all papers selected by the Executive Committee will be auctioned to the members of the Club and the proceeds credited to the Club funds The purchaser of any paper or periodical will receive the old copy of the same as soon as the new one arrives

47 (xxv) The constitution can be modified only once a year and only then provided 75 per cent of the quorum laid down in rule 47 (viii) vote in favour of the proposed changes Before any such change can be discussed it shall be necessary for the General Secretary to give one month's notice to all members For this it is also necessary to obtain the sanction of the Principal

All correspondence including newspapers and periodicals meant for the Club shall be delivered to the General Secretary, who will dispose of them in the manner required by the rules

47 (xxvi) All members when attending the Club are requested to refrain from appearing in negligé dress and are to be neatly and properly attired

(iii) Messing subscriptions as under —

(a) Vegetarians	Rs 30	per mensem
(b) Non vegetarians	3[illegible]	"
(c) Europeans and those wishing to mess in such a manner	4[illegible]	

Th[illegible] me[illegible] ing sub[illegible]criptions are liable to alteration in a[illegible] [illegible] with the circumstances prevailing in and outside the C[illegible]ll[illegible]ge

All [illegible]ntrance fees monthly subscriptions and messing charge[illegible] will be collected as "College dues" and be governed by th[illegible] [illegible]me rules as govern such collection and payment

of 18 [illegible]) All members of the mess will be liable for their month[illegible] subscription whether absent from the mess or not

M[illegible] [illegible]bers of th[illegible] mess will be allowed a rebate from their month[illegible] messing charges for —

([illegible] whole days away on tour

([illegible] one whole day or more when away on sanctioned leave i e leave sanctioned as per College Standing Order

but f[illegible] those days for which this rebate is allowed a charge of an[illegible] four per day will be made for table money

Th[illegible] rebate to be allowed will be as follows —

( ) Vegetarians	Re 1	per day
( ) Non vegetarians	1 4	
( ) Europeans	1 12	

A b[illegible]ok will be maintained in the mess and all members who wish to avail themselves of the concession of rebate on messin[illegible] [illegible]ges for any absence as noted above must sign this [illegible] 24 hours before they leave the College

Sl[illegible] so full messing charges will have to

be paid There will be no excuses accepte ment of this rule In the case of a whole on tour or the whole three classes then the either case, who is a member of the mess for signing the book for all

For meals on days of departure and ret pay for each meal of which they partake ates —

- (i) Vegetarians—
  - (a) Breakfast
  - (b) Lunch
  - (c) Tea
  - (d) Dinner
- (ii) Non vegetarians—
  - (a) Breakfast
  - (b) Lunch
  - (c) Tea
  - (d) Dinner
- (iii) Europeans—
  - (a) Breakfast
  - (b) Lunch
  - (c) Tea
  - (d) Dinner

Should a member be ill and confined to the College Medical Officer, he may partake his quarters but his own servants must go to food *On no account will mess appointn allowed to be taken to member's room in for illness*

Gener nvita

Members are expected to be punctual a responsibility can be assumed for the provis of regular hours except as provided for in rul

Property

48 (vi) No member may invite an meal without first entering in the guest boo

(iii) Messing subscriptions as under —

(a) Vegetarians	Rs 30	per mens n.
(b) Non vegetarians	,, 35	,,
(c) Europ ans and those wishing to mess n such a manner	,, 40	,,

These messing sub criptions are liable to alteration in ordance with the circumstances prevailing in and outside College

All ntrance fees, monthly subscriptions and messing arges will be collected as "*College dues*" and be governed th me rules as govern such collection and paymert

18 (i) All members of the mess will be liable for their onthly subscription whether absent from the mess or not

Members of the mess will be allowed a rebate from their onthly messing charges for —

(i) whole days away on tour

(ii) one whole day or more when away on sanctioned leave, i e leave sanctioned as per College Standing Orders,

it for those days for which this rebate is allowed a charge annas four per day will be made for table money

The rebate to be allowed will be as follows —

(Vegetarians	Re 1	per day
( ) Non vegetarians	,, 1 4	,,
(ii) Europeans	, 1 12	

A book will be maintained in the mess and all members ho wish to avail themselves of the concession of rebate on essing charges for any absence as noted above must sign is book a clear 24 hours before they leave the College hould they fail to do so full messing charges will have to

be paid There will be no excuses accepted for an infringement of this rule In the case of a whole class being away on tour or the whole three classes then the senior student in either case, who is a member of the mess will be responsible for signing the book for all

For meals on days of departure and return members will pay for each meal of which they partake at the following rates —

	Rs	a	p
(i) Vegetarians—			
(a) Breakfast	0	3	0
(b) Lunch	0	8	0
(c) Tea	0	3	0
(d) Dinner	0	10	0
(ii) Non vegetarians—			
(a) Breakfast	0	4	0
(b) Lunch	0	10	0
(c) Tea	0	3	0
(d) Dinner	0	12	0
(iii) Europeans—			
(a) Breakfast	0	8	0
(b) Lunch	0	12	0
(c) Tea	0	4	0
(d) Dinner	1	0	0

Should a member be ill and confined to his quarters by the College Medical Officer, he may partake of his meals in his quarters but his own servants must go to the mess for his food *On no account will mess appointments etc, be allowed to be taken to member's room in cases other than for illness*

Members are expected to be punctual at all meals No responsibility can be assumed for the provision of meals out of regular hours except as provided for in rule 48 (xviii)

48 (xi) No member may invite any guests to a meal without first entering in the guest book (which will

maintained in the mess for the purpose) notice of his intention and at least 2 hours notice is to be given Cancellation under 2 hours notice will not be accepted No member may invite a guest to the mess without first obtaining the sanction of the President

The rates for meals for single guests will be as under —

	Rs	a	p
(i) Vegetarians—			
(a) Breakfast	0	3	0
(b) Lunch	0	8	0
(c) Tea	0	3	0
(d) Dinner	0	10	0
(ii) Non vegetarians—			
(a) Breakfast	0	4	0
(b) Lunch	0	10	0
(c) Tea	0	3	0
(d) Dinner	0	1	0
(iii) Europeans—			
(a) Breakfast	0	8	0
(b) Lunch	0	12	0
(c) Tea	0	4	0
(d) Dinner	1	0	0

The rates for whole day messing for guests will be as follows —

	Rs	a	p
(i) Vegetarians	1	4	0
(ii) Non vegetarians	1	8	0
(iii) Europeans	2	0	0

48 (vii) No invitations in the name of the mess shall be given to any individual or party without the consent of the President and if consent be given all members will bear a proportion of the cost whether absent or not

48 (viii) All property furniture appointments etc in the mess as far as the mess is concerned are the property of the Thomason College of Civil Engineering and no individual member has any share in it whatsoever

All damage done by members whether accidentally or not will be paid for by the members causing such damage and such members will sign a chit for any such damage when called upon to do so by the President Secretary or any member of the committee

The right to lend any of the mess property servants etc, for any College functions, teas etc is vested solely in the President The mess property and appointment are not in any case to be lent to any private individual or individuals whether belonging to the College or not

48 (ix) It is the duty of the Secretary in conjunction with the members of the Committee to prepare the menus for the ensuing week and to see that the food supplied cooked or uncooked is of the best quality The Secretary will bring complaints to the notice of the President The mess servants are under the direct control of the Principal and the President appointed by the Principal Secretary's duties

48 (x) The mess Secretary will arrange messing in camp for those members of the mess who have to go to the 2nd year survey camp or to the 3rd year minor or major project camps Survey camp messing

48 (xi) The hours of messing will be as follows generally — Hours of messing

(i) Breakfast	7 00 hours to 8 30 hours
(ii) Lunch	11 00 to 13 00
(iii) Tea	No fixed hours
(iv) Dinner	19 30 hours

or as may be fixed from time to time

48 (xii) The mess President in consultation with the Secretary will employ all table servants and other servants for the mess Member s private servants are not to be allowed in the mess building or its precincts and kitchens Mess servants.

members may attend in sports dress Members appearing for meals not dressed in accordance with this rule will be asked by the senior member present to leave the mess in order to attire themselves properly

48 (xxiii) No smoking will be allowed during the first half an hour of any meal except during tea

48 (xxiv) No concert parties or other kinds of entertainment will be allowed in the mess building These entertainments, when sanctioned are to be held in the C E Students' Club

Rules of the Overseer Class Club

49 (i) All students of the Overseer Class have to be members of the Club, and they shall abide by the rules and regulations in force A breach of the rules or conduct unbecoming a member of the Club will debar him from the enjoyment of the Club privileges to the extent approved by the President on the recommendation of the Club Secretary

49 (ii) The Principal will be the patron of the Club and the Head Master will be the President of the Club

The Vice President will be the senior student of the Second Year, who will also be one of the six members of the Executive Committee

The President will be assisted in the management of the Club by a committee composed of five members Five of these will be elected at a general meeting of the Club in the following manner —

(*a*) Club Secretary	Will be in charge of various outdoor games connected with the Club
(*b*) Tennis Secretary	
(*c*) Hockey Secretary,	
(*d*) Football Secretary,	
(*e*) Volleyball Secretary,	

Disciplinary and financial control will be exercised by the Head Master, Overseer Class

49 (iii) (a) Each student of the Overseer class, will pay compulsorily Rs 5 per mensem for each of the 9 months of each session for Club Recreation and Boating of which Rs 3 will be credited to the Club and Recreation fund and Rs 2 to the Boating Fund

(b) Each will pay compulsorily an entrance fee of Rs 3 upon first joining the College the whole of which will be credited to the Club and Recreation fund

Annual Regatta Rules

50 (i) *President*—The Principal will appoint a member of the College Staff as President of the Regatta Committee

The President will choose his own Committee

50 (ii) *Date*—The Annual Regatta will be held early in June on a date fixed by the Principal on the recommendation of the President

The Annual Regatta is open to such students of both Civil Engineer and Overseer Classes as have passed both the Swimming and rowing tests

Heats for the various events of the Regatta will take place on dates to be notified by the President

50 (iii) *Entries and Entrance fee*—All entries will close at noon on a date to be notified by the President

The entrance fees will be 8 annas for entrants per challenge event excluding the coxswains

50 (iv) *Events*—The Regatta events will be as follows —

1 Challenge Single Sculls
2 Challenge Double Sculls
3 Challenge Pair Oars
4 Challenge Fours

5 (a) Swimming Race } For Indian garrison
(b) Pontoon Race }
6 Greasy Pole (Open to public)

50 (v) *Course*—All events will be rowed on the Ganges Canal downstream The finishing point will be about 300 Yards above the Ganeshpur bridge The length of the course will be as follows —

For events 1, 2 and 3—½ mile

For event 4—¾ mile

50 (vi) *Substitutes*—One substitute will be allowed to row in a four to replace a man who is unfit provided that the substitute is eligible and his name has not been entered in any other crew in that event The name of the substitute need not be submitted

No substitute will be allowed in half mile races

50 (vii) Events 1, 2 3 and 4 are open to students of both the Civil Engineer and Overseer Classes, but the crews and cox are to be either all Civil Engineer class students or all Overseer class students A Civil Engineer class crew and cox may consist of a crew and cox drawn from all 3 years and similarly an Overseer class crew and cox may consist of a crew drawn from both years There is no special race in which crews from any particular year compete against another such crew

50 (viii) *Punctuality*—Heats will be started punctually at the time fixed Competitors should arrive at the starting point 10 minutes before the time in order to adjust stretchers and straps, etc Any crew not found ready at the time fixed for the start is liable to be disqualified

50 (ix) *Disqualification*—(a) Any crew causing delay at the start by inability to turn and manoeuvre their boat as ordered by the starter will be disqualified

(b) Any crew fouling another crew during the race by

touching with their oars or boat the oars or boat of the other crew when in the latter crew's water will be disqualified No crew is permitted to take its opponent's water unless it is leading by two lengths and on the approach of the other it must give way and retire to its own water

50 (x) *General*—A boat is never to be brought into the bank or taken out from the bank unless the boat is pointing upstream Thus a boat must always be turned round after a race before approaching the bank

50 (xi) *Prize distribution*—The prize distribution will take place soon after the last race is rowed Prizes will be awarded for events 1, 2 3 and 4 and also for boating (best oar in Civil Engineer Class 3rd year or overseer class 2nd year) The prizes for the events 5 and 6 will not be awarded but will be sent over to Adjutant K G O Bengal Sappers and Miners to be given to the winners by the Commandant

Boating and Swimming Rules

51 (i) These events will be in charge of a member of the staff who will be appointed by the Principal each year and who will be known as Officer in charge Boating

51 (ii) The duties of Officer in charge Boating will be as follows —

(a) To arrange for the swimming tests in consultation with the President Recreation on or about November 15 April 1 and July 1 each session and to maintain a record of the results of these tests

(b) To arrange and supervise the coaching in rowing of such students as have passed the swimming test and also to arrange for the rowing test

(c) To arrange to store up all boats by June 30, and report to President Recreation his having done so

To inspect the boats from time to time and report the result of these inspections

(d) To report to President Recreation by January 31 each year the condition of each boat and submit an estimate for the cost of repair, varnishing etc and to see that repairs etc are completed by March 15 at the latest

(e) To submit to President Recreation by May 31 his proposals if any for the replacement of old boats by new

(f) To maintain a log book of boats giving the following inventories —

(i) number and description of each boat and its equipment

(ii) year of its purchase or building and the purchase price (together with freight etc) or cost of building

(iii) cost of repairs (including varnishing) executed during the College session together with dates of execution

51 (iii) *Swimming*—All students of the Civil Engineer and Overseer Classes are required to pass the swimming test before they can be permitted to take up rowing

Students who wish to learn to swim must begin their lessons in Amber Talab (or in the College Swimming Tank when it is completed) and not in the main Canal Such students will take their lessons only at times arranged by Officer in-charge of Boating who will see that the Boatman is present at these lessons

Students will not be allowed to enter the boats or baths in the main canal till they have qualified in swimming

The swimming tests will be held each year on or about November 15, April 1 and July 1 The test shall consist of swimming half way across the canal and back and will take place downstream of Solani Aqueduct

Maximum marks allotted for the test are —

for Civil Engineer Class students—30

for Overseer Class students—20

51 (iv) *Rowing*—The rowing test will be held in the last week of April

To pass the test a student must be able to handle the oars properly, should be able to backwater with either or both hands and should be able to turn the boat in any direction

No marks will be allotted for this test

Only such students as have passed this test will be allowed to enter the Regatta

51 (v) *Boating*—Boating season will be from the beginning of April to first week in June during which the finals of Annual Regatta will be held

Boating is only allowed in the reach of the canal between the brick lions below the Roorkee city bridge and the Ganeshpur bridge

No students will be permitted to take out boats before April 1

To encourage rowing the boating season may be extended till the end of June

Students will not be permitted to take out boats after June 30

YEARLY LISTS OF STUDENTS, WHO HAVE PASSED OUT OF THE COLLEGE FROM 1935 INCLUSIVE. (FOR LISTS DATING BACK TO 1933, INCLUSIVE SEE CALENDAR FOR 1934. FOR LIST DATING BACK TO 1910 INCLUSIVE SEE CALENDAR FOR 1928 FOR LISTS DATING BACK TO 1890 SEE CALENDAR FOR 1925 FOR LISTS TO 1875 SEE CALENDAR FOR 1922), AND FOR LISTS TO 1848 SEE CALENDAR FOR 1910.

1935.

No.	Names	Where educated.	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR *Full marks—8,090)*				
1	Chandar Prakash Malik.	Forman Christian College, Lahore.	6124	76	Honours Diploma as Civil Engineer. Council of India Prize of Rs.1,000 for General Proficiency. Thomason Memorial Gold Medal and books worth Rs.25 for best Engineering Designs and Silver Medal for Mechanical Engineering. Sushila & J. Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry.
2	Jai Krishna, B SC.	Meerut College, Meerut.	6035	75	Honours Diploma as Civil Engineer. Thomason Prize of Rs.250 for the most distinguished student who obtains the Honours Diploma but does not obtain the Council of India Prize Cautley Memorial Gold Medal for Mathematics and Calcott Reilly Memorial Gold Medal for Applied Mechanics Silver Medal for Survey and Drawing and Laboratory Practice Group IV.
3	Kailash Chandra Sood.	Agra College, Agra .	5997	74	Honours Diploma as Civil Engineer. Rai Bahadur Kanhaiya Lal Gold Medal for best *Indian student who* does not obtain the Thomason Prize or Council of India Prize. General MacLagan's Prize of Books for Electrical Engineering and Physics Silver Medal for Descriptive Engineering.

1935.

No	Names.	Where educated	Marks gained	Per cent	Remarks.
4	Jagdish Rai Tandon, B A	D. A.-V. College, Lahore	5794	72	Honours Diploma as Civil Engineer.
5	Arthur Richard Mitchell.	Bishop Cotton College, Simla.	5350	66	Honours Diploma as Civil Engineer.
6	Prem Nath Kumra, B A	Hindu College, Delhi.	5207	64	Ordinary Diploma as Civil Engineer.
7	Prithvi Nath Srivastava.	Lucknow University	5173	64	Ordinary Diploma as Civil Engineer.
8	Puran Singh Sagoo	Government College, Lahore.	5066	63	Ordinary Diploma as Civil Engineer.
9	Hem Raj ..	Agra College, Agra	4960	61	Ordinary Diploma as Civil Engineer.
10	Kashi Saran Misra	Government Intermediate College, Fyzabad	4876	60	Ordinary Diploma as Civil Engineer.
11	Mahabir Sahai Mathur	St Stephen's College, Delhi	4751	59	Ordinary Diploma as Civil Engineer.
12	Sardari Lal	Agra College, Agra	4606	57	Ordinary Diploma as Civil Engineer.
13	Abdul Fayyaz Quraishi.	Muslim University, Aligarh.	4508	56	Ordinary Diploma as Civil Engineer; does not qualify in equitation
14	Nasir Sultan Ali Khan.	Allahabad University, Allahabad	4412	55	Ordinary Diploma as Civil Engineer
15	Hans Raj Varma	Agra College, Agra	4400	54	Ordinary Diploma as Civil Engineer
	Harbans Lal	Forman Christian College, Lahore	5403	67	Honours Diploma as Civil Engineer

1935

No	Names	Where educated.	Marks gained	Per cent	Remarks
	OVERSEER CLASS, SECOND YEAR.				
	(Full marks—4 200)				
1	Anand Swaroop Mangal (Ajmer Merwara)	Government College, Ajmer	2969	71	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for best Indian student who stands 1st in the class Durga Das Dutt Silver Medal for best Indian student obtaining Higher Certificate Silver Medals for Surveying, Workshops Fairley Memorial Silver Medal for Applied Mechanics
2	Saiyid Agha Masud ul Hasan	Agra College, Agra	2956	70	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands 2nd in the class
3	Basheshwar Nath Goel	Meerut College, Meerut	2893	69	Higher Certificate as Overseer
4	Gopi Chand	Ditto	2846	68	Higher Certificate as Overseer Keay Memorial Silver Medal and *Rs 18 for Estimating* Silver Medal for Descriptive Engineering and Sullivan Memorial Medal for Mechanics
5	Dhani Ram Garga	Government High School, Saharanpur	2811	67	Higher Certificate as Overseer Silver Medal for Accounts
6	Tara Chand Pande	Government Intermediate College, Etawah	2806	67	Higher Certificate as Overseer Silver Medal for Elementary Mathematics

1935

No	Names.	Where educated	Marks gained	Per cent	Remarks
7	Jagdish Prasad	Dharamsamaj Intermediate College Aligarh	2730	65	Higher Certificate as Overseer.
8	Ghulam Dastgir	Government Intermediate College Moradabad.	2704	64	
9	Johari Mal Jain (Jodhpur State)	Jaswant College Jodhpur	2121	62	Higher Certificate as Overseer Not qualified in Equitation
10	Umrao Singh Sharma	MacDonnell High School Jhansi	2558	61	Higher Certificate as Overseer
11	Iqbal Bahadur Asthana	Agra College Agra	2503	60	Ordinary Certificate as Overseer
12	Chandi Prasad	D A V High School Cawnpore	2479	59	
13	Sukhbir Prasad	Government High School Mainpuri.	2461	59	
14	Shiva Sharan	D S M High School Kanth	2451	58	Ordinary Certificate as Overseer Silver Medal for Project
15	Ram Chandra Jauhari	Government High School Budaun	2420	58	Ordinary Certificate as Overseer Silver Medal for Drawing
16	Hari Singh Rathore (Jodhpur State)	Jaswant College Jodhpur	2380	57	Ordinary Certificate as Overseer
17	Kailash Chandra Mahesh	Meerut College Meerut	2291	55	
18	Manohar Lal Gupta	G C O High School Roorkee	2262	54	
19	Satya Prakash Gupta	S M College, Chandausi	2214	53	
20	Mangal Sen	Government High School, Saharanpur	2210	53	

1935

No	Names	Where educated	Marks gained	Per cent	Remarks
21	Brij Kishore	Government High School, Hapur	2210	53	Ordinary Certificate as Overseer
22	*Krishna Behari Lal Saksena*	*Christ Church College, Cawnpore*	2203	52	
23	Jai Deo Sharma (Jodhpur State)	Jaswant College Jodhpur	2174	52	
24	Hari Mohan Mathur	Government High School, Rae *Bareli*	2137	51	
	Inder Prasad Gupta	Government High School, Muzaffarnagar	2393	57	

1935.

No.	Names of students	Remarks.
	DRAFTSMAN CLASS, THIRD YEAR	
1	Sudarshan Lal ..	Second class certificate as Draftsman in 2nd Division.
2	Amar Nath	

1938

No	Names	Where educated	Marks gained	Percentage	Remarks
	Civil Engineer Class, Third Year (*Full marks*—8 090)				
1	Prem Nath ..	Government College, Lahore	5134	[illegible]	Honours Diploma as Civil Engineer Council of India Prize of Rs 1 000 for General Proficiency Silver Medal for Descriptive Engineering (Theoretical) Silver Medal for Surveying Cantley Memorial Gold Medal for Mathematics. Calcott Reilly Memorial Gold Medal for Applied Mechanics.
2	Gian Chand Aggarwal.	Forman Christian College, Lahore	[illegible]	[illegible]0	Honours Diploma as Civil Engineer Thomason Prize of Rs. [illegible]0 for the most distinguished student who obtains the Honours Diploma but does not gain the Council of India Prize Silver Medals for Mechanical Engineering and Drawing
3	Sumat Kishore Jain.	St. Stephen's College Delhi	[illegible]	[illegible]	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for best Indian student who does not obtain the Thomason Prize or Council of India Prize General MacLagan's Prize of Books for Electrical Engineering and Physics. Silver Medal for Laboratory Practice, Group IV

1936

No.	Names	Where educated	Marks gained	Per cent	Remarks
4	Rajendra Kumar Kochhar	D A V College, Cawnpore	5423	67	Honours Diploma as Civil Engineer. Sushila and J. Mittra Memorial Silver Medal for Indian student who obtains the highest marks in Chemistry
5	Ram Prasad Seth	Agra College, Agra	5126	63	Ordinary Diploma as Civil Engineer.
6	Krishna Murari	Meerut College, Meerut.	5080	63	
7	Anand Prakash	Ditto	5052	62	Ordinary Diploma as Civil Engineer. Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering Designs.
8	Chandra Prakash	Ditto	4958	61	Ordinary Diploma as Civil Engineer.
9	Bodh Raj Palta	Government College, Lahore	4915	61	
10	Barkat Ram	D. A V College, Lahore	4853	60	
11	Mohammad Shafie	Government College, Lahore	4772	59	
12	Raj Kumar Kothiala	Forman Christian College, Lahore	4711	58	
13	Sydney Cyril Keelan	St George's College, Mussoorie	4670	58	
14	Triloki Krishan Kalia.	Forman Christian College, Lahore	4312	5	
	Sankar Prasad Kala	Government High School Srinagar, Garhwal	4686	58	
	Masud Ahmad	Government College, Lahore	4330	54	

1936

No.	Name	Where educated	Marks gained	Per cent	Remarks
	OVERSEER CLASS, SECOND YEAR (*Full marks*—4 200)				
1	Shyam Behari Lal Gupta	Government Intermediate College, Etawah	2974	71	Higher Certificate as Overseer Silver Medal and Rs 100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for best Indian student who stands 1st in the class Durga Dass Dutt Silver Medal for best Indian student obtaining Higher Certificate Silver Medals for Elementary Mathematics, Descriptive Engineering Surveying and Drawing Sullivan Memorial Silver Medal for Mechanics
2	Ghanshiam Das Varshney	Dharamsamaj Intermediate College Aligarh	2867	68	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands 2nd in the class Fairley Memorial Silver Medal for Applied Mechanics Silver Medals for Workshops and Project
3	Chandra Bhan Sharma	N R E C Intermediate College, Khurja	2682	64	
4	Labdhi Chand Surana. (Jodhpur State)	Jaswant College, Jodhpur	2675	64	
5	Jugal Kishor Gupta	N A S High School, Meerut	2673	64	Higher Certificate as Overseer
6	Bhagwan Das Gupta.	A K K High School, Tirwa	2650	63	
7	Deo Datt Sharma	Ramjas High School, Delhi	2564	61	

1936

No	Names	Where educated	Marks gained	Per cent	Remarks
8	Shree Vallabh Sharma (Jodhpur State)	Jaswant College, Jodhpur	2510	60	Ordinary Certificate as Overseer
9	Vishveshwar Dayal	A V School, Aupshahr	2504	60	
10	Chandra Bhan	D N High School Meerut	2471	59	
11	Jagdish Prasad Garga	Meerut College Meerut	2460	59	
12	Mahesh Prashad	Ditto	2437	58	Ordinary Certificate as Overseer Keay Memorial Silver Medal and Rs 18 for Estimating
13	Trilok Chand	Government High School Muzaffarnagar	2428	58	Ordinary Certificate as Overseer
14	Sagar Mal	Ditto	2409	57	Ordinary Certificate as Overseer Silver Medal for Accounts
15	Babu Ram Garga	Government High School Saharanpur	2387	57	Ordinary Certificate as Overseer
16	Rama Nath	Government Intermediate College Etawah	2310	5	
17	Sitla Prasad Saxena	D A V College Dehra Dun	2295	55	Ordinary Certificate as Overseer Not qualified in Equitation
18	Sugan Chandra Goyal	Government College Ajmer	2257	54	
19	Bhagwan Das Kansal	Government High School, Hapur	2231	53	Ordinary Certificate as Overseer
20	Ram Saran Das Goyal	Government High School Roorkee	2206	53	
21	Basdeo Prasad Goel	Ditto	2178	52	Ordinary Certificate as Overseer Not qualified in Equitation.

1936

No	Names	Where educated	Mark gained	Per cent	Remarks
22	Girish Chandra Pant	Government Intermediate College Almora	2169	52	
23	Radhey Shiam Sharma	D N High School Meerut	2138	51	Ordinary Certificate as Overseer
	Ganga Dass .	Meerut College, Meerut	2444	58	
	Mulk Raj Sahni	Victoria High School, Agra	2296	55	Ordinary Certificate as Overseer Not qualified in Equitation
	Janardhan Das	Government High School, Roorkee	2181	52	Ordinary Certificate as Overseer.
	Ram Narain Jauhari	Government High School, Budaun	2165	52	

1936

No.	Names of students	Remarks
	DRAFTSMAN CLASS, THIRD YEAR	
	No students of this Class passed out this year	

1937

No.	Names.	Where educated.	Marks gained.	Per cent	Remarks.
	CIVIL ENGINEER CLASS, THIRD YEAR (*Full marks*—8,030)				
1	Kedar Nath Misra.	University of Allahabad.	5801	72	Honours Diploma as Civil Engineer. Council of India Prize of Rs 1,000 for General Proficiency. Sushila and J. Mittra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry, and Silver Medal for Surveying.
2	Bhawani Shanker Sharma.	Meerut College, Meerut.	5716	71	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished student who obtains the Honours Diploma but does not gain the Council of India Prize. Cautley Memorial Gold Medal for Mathematics, Group II. Calcott Reilly Memorial Gold Medal for Applied Mechanics. Silver Medal for Mechanical Engineeing.
3	Shri Krishn Agarwal.	Government Jubilee Intermediate College, Lucknow.	5706	71	Honours Diploma as Civil Engineer. Rai Bahadur Kanhaiya Lal Gold Medal for the most distinguished Indian student, who does not obtain the Council of India or Thomason Prizes. General Maclagan's Prize of books for Electrical Engineering and Physics. Silver Medals for Civil Engineering (Theoretical) and Laboratory Practice, Group IV (Practical)

1937

No	Names	Where educated	Marks gained	Per cent	Remarks
4	Harish Chandra Kaushal	B N S D Intermediate College, Cawnpore	5619	69	Honours Diploma as Civil Engineer Thomason Memorial Gold Medal and books worth Rs 25 for the best engineering designs (Project)
5	Ram Bilas	D A V College Lahore	5580	69	Honours Diploma as Civil Engineer
6	Har Bansh Kishore Agarwala	Agra College Agra	5195	64	Ordinary Diploma as Civil Engineer
7	Bishan Sarup Bansal	Government College, Lahore	5185	64	Ordinary Diploma as Civil Engineer and Silver Medal for Drawing
8	Chandra Narayan Shukla	Benares Hindu University Benares	5168	64	
9	Sada Bihari Mathur	University of Allahabad	5161	64	
10	Dharm Pal	D A-V College Dehra Dun	5080	63	
11	Leonard R Keelan	St George s College Manor House, Mussoorie	4871	60	Ordinary Diploma as Civil Engineer
12	Jahar Lal Banerjee	St Stephen s College, Delhi	4857	60	
13	Indar Sain Chopra	Government College, Ludhiana	4820	60	
14	Raghu Nath Singh Gahlowt	Udai Pratap Intermediate College Benares	4742	59	

1937

No	Names.	Where educated.	Marks gained	Per cent	Remarks.
15	Rama Dayal .	Government Jubilee Intermediate College, Lucknow	4657	58	Ordinary Diploma as Civil Engineer
16	Kapur Chand Gupta.	Forman Christian College, Lahore	4367	54	
17	Alim Uddin ..	Meerut College, Meerut.	4297	53	
	Mehar Singh	Hindu College, Delhi.	4865	60	

1937.

No	Names	Where educated	Marks gained	Per cent	Remarks
	Overseer Class, Second Year (*Full marks*—4,200)				
1	Shiam Sunder Agarwala	D N. High School, Meerut	2921	70	*Higher Certificate* as Overseer *Silver Medal* and Rs 100 for General Merit. Rai Bahadur Kanhaiya Lal *Silver Medal* for Indian student who stands 1st in the class The Durga Dass Dutt *Silver Medal* for best Indian student obtaining *Higher Certificate* *Silver Medals* for Descriptive Engineering, Surveying and Workshops, Group V
2	Sultan Ahmad Makhdumi	Maharaja's College Jaipur	2859	68	*Higher Certificate* as Overseer Rai Bahadur Kanhaiya Lal *Silver Medal* for Indian student who stands 2nd in the class *Silver Medal* for Mathematics (Elementary) Sullivan Memorial *Silver Medal* for Mechanics Keay Memorial *Silver Medal* and about Rs 18 for Estimating
3	Hukam Chandra Jain.	Shri Mahabir Jain High School, *Delhi.*	2662	63	*Higher Certificate* as Overseer and *Silver Medal* for Drawing

1937.

No.	Names.	Where educated	Marks gained.	Per cent.	Remarks.
4	Shive Kumar ..	N. A. S. High School, Meerut.	2655	63	*Higher Certificate* as Overseer. Fairley Memorial *Silver Medal* for Applied Mechanics.
5	Radhe Lal ..	Meerut College, Meerut.	.649	63	*Higher Certificate* as Overseer.
6	Sheoraj Singh	Ditto ..	2581	61	*Ordinary Certificate* as Overseer.
7	Manmohan K. Pande.	La Martinière College, Lucknow.	2538	60	*Ordinary Certificate* as Overseer.
8	Shanker Saran ..	B. N. S. D Intermediate College, Cawnpore.	2532	60	*Higher Certificate* as Overseer.
9	Ratan Kumar Dheer.	D. A. V. College, Cawnpore.	2499	60	*Ordinary Certificate* as Overseer and *Silver Medal* for Project.
10	Om Prakash Gupta	Private ..	2485	59	*Ordinary Certificate* as Overseer.
11	Chandra Prakash Goyal.	Meerut College, Meerut.	2483	59	*Ordinary Certificate* as Overseer.
12	Khayali Ram Pearay Lal Sharma.	Ditto .	2370	56	*Ordinary Certificate* as Overseer.
13	Dhani Ram ..	D. A.-V. Intermediate College, Dehra Dun.	2360	56	*Ordinary Certificate* as Overseer.
14	Raghubar Dayal Mahesh.	D. N. High School, Meerut.	2276	54	*Ordinary Certificate* as Overseer and *Silver Medal* for Accounts.
15	Shikhar Chand Jain	M. B. High School, Muktsar, district Ferozepore	2257	54	*Ordinary Certificate* as Overseer.
16	Chandra Prakash	D. A.-V. High School Muzaffarnagar.	2256	54	*Ordinary Certificate* as Overseer.

1937.

No	Names	Where educated	Marks gained	Per cent	Remarks.
17	Bishen Gopal Gupta	Bareilly College, Bareilly.	2255	54	
18	Suraj Bhan	Meerut College, Meerut	2241	53	
19	Trilok Chand Singhal	Government High School, Hapur	2131	51	Not qualified in equation
20	Rajeshwar Nath Bhatnagar	S M Intermediate College, Chandausi	2130	51	*Ordinary Certificate* as Overseer.
	Mohammad Azim	Lucknow Christian College, Lucknow	2185	52	
	Abdul Sami	Kubair High School, Dibai	2109	50	

1937.

No.	Names.	Where educated	Marks gained	Per cent.	Remarks.
4	Shive Kumar	N. A. S. High School, Meerut.	2655	63	*Higher Certificate* as Overseer Fairley Memorial *Silver Medal* for Applied Mechanics
5	Radhe Lal	Meerut College, Meerut.	2649	63	*Higher Certificate* as Overseer.
6	Sheoraj Singh	Ditto	2581	61	*Ordinary Certificate* as Overseer.
7	Manmohan K. Pande.	La Martinière College, Lucknow.	2538	60	
8	Shanker Saran ..	B. N. S. D. Intermediate College, Cawnpore	2532	60	*Higher Certificate* as Overseer.
9	Ratan Kumar Dheer.	D. A. V. College, Cawnpore	2499	60	*Ordinary Certificate* as Overseer and *Silver Medal* for Project.
10	Om Prakash Gupta.	Private	2485	59	*Ordinary Certificate* as Overseer.
11	Chandra Prakash Goyal.	Meerut College, Meerut	2483	59	
12	Khayali Ram Pearay Lal Sharma	Ditto	2370	56	
13	Dhani Ram ..	D. A.-V. Intermediate College, Dehra Dun.	2360	56	
14	Raghubar Dayal Mahesh	D. N. High School, Meerut.	2276	54	*Ordinary Certificate* as Overseer and *Silver Medal* for Accounts
15	Shikhar Chand Jain	M. B. High School Muktsar, district Ferozepore	2257	54	*Ordinary Certificate* as Overseer
16	Chandra Prakash	D. A.-V. High School Muzaffarnagar.	2256	54	

1938

No	Names	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS THIRD YEAR (*Full marks*—8090)				
1	Jagdish Sharan Jain	S D College Lahore	6341	78	Honours Diploma as Civil Engineer Council of India Prize of Rs 1 000 for General Proficiency Cautley Memorial Gold Medal for Mathematics Group II General Maclagan's Prize of books for Electrical Engineering and Physics Silver Medals for Civil Engineering (Theoretical) Drawing and Mechanical Engineering
2	Nirmalendu Bhushan Banerji	College of Science University of Allahabad	6122	76	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished student, who obtains the Honours Diploma, but does not gain the Council of India Prize Sushila and J Mitra Memorial Silver Medal for Indian student who obtains highest marks in Chemistry
3	Sher Bahadur	Bareilly College, Bareilly	6026	74	Honours Diploma as Civil Engineer Rai Bahadur Kanhaiya Lal Gold Medal for the most distinguished student who does not obtain the Council of Indian Prize or Thomason Memorial Prize Calcott Reilly Memorial Gold Medal for applied Mechanics Silver Medal for Surveying

1937.

No	Names of students	Remarks
	DRAFTSMAN CLASS, THIRD YEAR.	
	No students of this Class passed out this year.	

1938.

No.	Names	Where educated	Marks gained	Per cent.	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR. (*Full marks*—8090)				
1	Jagdish Sharan Jain.	S D. College, Lahore.	6341	78	Honours Diploma as Civil Engineer Council of India Prize of Rs 1,000 for General Proficiency Cautley Memorial Gold Medal for Mathematics, Group II General Maclagan's Prize of books for Electrical Engineering and Physics Silver Medals for Civil Engineering (Theoretical), Drawing and Mechanical Engineering.
2	Nirmalendu Bhushan Banerji.	College of Science, University of Allahabad.	6122	76	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished student, who obtains the Honours Diploma, but does not gain the Council of India Prize Sushila and J Mitra Memorial Silver Medal for Indian student who obtains highest
3	Sher Bahadur .	Bareilly Bareilly.			
					Gold Medal for the most distinguished student who does not obtain the Council of Indian Prize or Thomason Memorial Prize Calcott Reilly Memorial Gold Medal for applied Mechanics. Silver Medal for Surveying

1933.

No	Names	Where educated	Marks gained	Per cent	Remarks
4	Stanislaus Francis Braganza	St Joseph's College, Naini Tal	5899	73	Honours Diploma as Civil Engineer The Puran Mal Silver Medal for Public Health Engineering
5	Gulzar Singh Sidhu	Mohindra College, Patiala	5812	72	Honours Diploma as Civil Engineer.
6	Prahlad Das	University of Allahabad	5714	71	Honours Diploma as Civil Engineer. Thomason Memorial Gold Medal and books worth Rs.25 for the best Engineering designs (projects).
7	Bakhshi Madan Mohan Anand.	Hindu Sabha College, Amritsar	5583	69	
8	Rameshwar Lall Agarwal	Government Intermediate College, Moradabad	5547	69	Honours Diploma as Civil Engineer (Nos. 7–9)
9	Edmund Phillip	St Xavier's College, Calcutta	5341	66	
10	Kartik Prasad	University of Allahabad.	5181	64	Ordinary Diploma as Civil Engineer. Silver Medal for Laboratory Practice group IV (Practical)
11	D N. Kochhar	Murray College, Sialkot	5142	64	
12	Nawal Kishore Mehra.	Government College, Ajmer	5015	62	
13	Gurdial Singh Berar	Ewing Christian College, Allahabad.	4964	61	Ordinary Diploma as Civil Engineer. (Nos. 11–14)
14	Avinash Chandra Mathur	Government Intermediate College, Allahabad	4893	60	

1938

No	Names	Where educated	Marks gained	Per cent	Remarks
15	Hari Krishna Das Capoor	Ewing Christian College Allahabad	4796	59	Ordinary Diploma as Civil Engineer
16	Krishan Raj Mehndi Ratta	Forman Christian College Lahore	4668	58	
17	Madan Gopal	D A V College Lahore	4547	56	
18	Kameshwar Sinha Bhatnagar	Herbert College Kotah	4444	55	
	(Full Marks 7500)				
	Lieutenant N S Bhagat	Indian Military Academy Dehra Dun	50[illegible]6	65	Honours Diploma as Civil Engineer
	Lieutenant Anant Singh	Ditto	5016	67	
	Lieutenant A N Kashyap	Ditto	4453	59	Ordinary Diploma as Civil Engineer

1938.

No.	Names	Where educated	Marks gained.	Per cent.	Remarks
	OVERSEER CLASS, SECOND YEAR (*Full marks*—4200)				
1	Nateshwar Prasad Jain.	D. A.-V. Inter. College, Dehra Dun.	3279	78	Higher certificate as Overseer. Silver Medal and Rs. 100 for General Merit. Rai Bahadur Kanhaiya *Lal Silver Medal* for best Indian student, who stands first in the class. The Durga Dass Dutt Silver Medal for best Indian student, obtaining Higher certificate. *Sullivan Memorial* Silver Medal for Mechanics. Keay Memorial Silver Medal and Rs. 18 for estimating. Silver Medals for Descriptive Engineering, *Workshops, Group V,* and Project. The Puran Mal Silver Medal for Public Health Engineering.
2	Sattya Narain Gupta.	Government Inter-College, Etawah.	3125	74	Higher certificate as Overseer. Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands second in the class. Silver Medals for Mathematics (Elementary) and Surveying.
3	Jai Bhagwan Gupta.	Hindu A.-N. High School, Gangoh.	3003	72	Higher Certificate as Overseer. Fairley Memorial Silver Medal for Applied Mechanics.

1938.

No	Names	Where educated	Marks gained	Per cent	Remarks
4	Raj Kumar Mishra	D A. V College, Cawnpore	2878	69	Higher Certificate as Overseer.
5	Malkhan Singh	D J High School, Baraut	2837	68	
6	Har Narayan Maheshwari	Government High School, Amroha	2712	65	
7	Basdeo Sharma	N R E C Inter College, Khurja	2705	64	
8	Dhan Lal Sah	Government High School, Naini Tal	2698	64	
9	Kailash Chandra	Hitkarini City College, Jubbulpore	2697	64	Higher Certificate as Overseer Silver Medal for Accounts.
10	Anand Prakash	Government High School, Muzaffarnagar	2696	64	Higher Certificate as Overseer.
11	Mahabir Prasad Jain	Meerut College, Meerut	2661	63	
12	Har Swarup Gupta	K P Inter College, Allahabad	2591	62	Ordinary Certificate as Overseer
13	Roshan Lal	B N S D Inter. College Cawnpore	2554	61	Higher Certificate as Overseer
14	Shiva Charan Lal	D S Inter College, Aligarh	2527	60	
15	Bisheshwar Dayal Agarwal	Thomason College, Roorkee	2510	60	Ordinary Certificate as Overseer.
16	Mahendra Singh Gill	Government C O High School, Roorkee	2507	60	
17	Kailash Chandra Goyal	Meerut College, Meerut	2456	58	
18	Shive Charan Dass Sharma	Ditto	2448	58	

1938

No	Names	Where educated	Marks gained	Per cent	Remarks
19	Ved Prakash Garg	Government High School, Bijnor	2438	58	Ordinary Certificate as Overseer
20	Beni Mohan Sinha	Anglo Bengali Inter College, Allahabad	2411	57	Ordinary Certificate as Overseer Silver Medal for Drawing
21	Bisheshwar Prasad Garg	Christian Inter College, Lucknow	2397	57	
22	Hasan Askari	Government High School, Saharanpur	2379	57	
23	Mittar Sen Garg	Government High School, Roorkee	2378	57	
24	Krishna Saroop	Bareilly College Bareilly	2368	56	
25	Sewa Ram	Government High School Muzaffarnagar	2360	56	
26	Satya Prakash Gupta	Government C O High School, Roorkee	2359	56	
27	Jugmander Dass	D Jain High School, Baraut	2343	56	Ordinary Certificate as Overseer
28	Om Prakash Gupta	Meerut College Meerut	2283	54	
29	Atma Ram Gupta	Ditto	2241	53	
30	Jagdish Prakash	Ditto	2205	53	
31	Shiva Raj Singh	D N High School, Meerut	2180	52	
32	Nirt Behari Mathur	Government Inter College Allahabad	2167	52	
33	Shyam Sundar	D A V High school Muzaffarnagar	2159	51	
34	Bishambhar Sahai Goel	Government High School, Hapur	2151	51	
35	Om Prakash Goyal	N A S High School Meerut	2100	50	
	Manak Chand Mehra	Government High School, Ajmer	2195	52	

1938.

No	Names of students	Remarks
	DRAFTSMAN CLASS, THIRD YEAR	
1	Jwala Das J Mathur	
2	Brahma Shanker Bhatnagar.	Certificate as Draftsman in 2nd division Silver Medal and Rs 20 for Second Best Draftsman. Qualified in Estimating.
3	Satya Prakash	Certificate as Draftsman in 2nd division. Qualified in Estimating.
4	Ajit Chandra Bose	Certificate as Draftsman in 2nd division Qualified in Estimating.

1939

No.	Names	Where educated	Marks gained	Per cent	Remarks
	CIVIL ENGINEER CLASS, THIRD YEAR				
	(Full marks—7,990)				
1	Akhtarul Islam Khan.	Bareilly College, Bareilly.	5822	73	Honours Diploma as Civil Engineer. Council of India Prize of Rs 1,000 for General Proficiency. Silver Medal for Civil Engineering (Theoretical) and Surveying
2	Shri Krishna Agrawala.	University of Allahabad	5676	71	Honours Diploma as Civil Engineer Thomason Prize of Rs 250 for the most distinguished Student who obtains the Honours Diploma but does not gain the Council of India Prize. Thomason Memorial Gold Medal and books worth Rs 25 for best Engineering Designs
3	Mahabir Prasad Jain	D A-V. College. Cawnpore	5501	69	Honours Diploma as Civil Engineer. Raj Bahadur Kanhaiya Lal Gold Medal for the most distinguished Indian student who does not obtain the Council of India or Thomason Memorial Prizes.
4	R L Kaushal	Government College Lahore.	5404	68	Honours Diploma as Civil Engineer.
5	Ashoke Kumar Gupta.	LaMartiniere College Lucknow.	540[illegible]	68	Honours Diploma as Civil Engineer. Silver Medal for Drawing. The Puran Mal Silver Medal for Public Health Engineering.

1939

No.	Names	Where educated	Marks gained	Per cent	Remarks
6	Virendra Nath Srivastava.	University of Allahabad	5355	67	Honours Diploma as Civil Engineer.
7	Debi Saran Sinha	Queen's College, Benares.	5236	66	Ordinary Diploma as Civil Engineer Cautley Memorial Gold Medal for Mathematics, (Group II). Calcott Reilly Memorial Gold Medal for Applied Mechanics General MacLagan's Prize of books for Electrical Engineering and Physics Silver Medal for Mechanical Engineering. Sushila and J. Mitra Memorial Silver Medal for Indian student, who obtains highest marks in Chemistry
8	Kewal Krishan	Government College, Ludhiana	5228	65	Ordinary Diploma as Civil Engineer
9	Naresh Chandra Saksena	D. A.-V Inter mediate College, Dehra Dun	5226	65	Ordinary Diploma as Civil Engineer. Silver Medal for Laboratory Practice (Group IV), Practical
10	John Theodore Talibuddin	Government Jubilee Intermediate College, Lucknow	5106	64	Ordinary Diploma as Civil Engineer
11	Roshan Lall Aggarwal	D. A.-V. College, Lahore.	5024	64	Ditto
12	Abdul Hamid	Meerut College, Meerut.	4888	61	Ditto
13	Purushottam Singh.	Lucknow University, Lucknow.	4622	58	Ditto.
14	Partul Chandra Khanna.	Government College, Lahore.	4412	55	Ditto.

1939

No.	*Names*	*Where educated*	Marks gained	Per cent	*Remarks*
15	Bhupendra Sarup Johri	University of Allahabad	4408	55	Ordinary Diploma as Civil Engineer
16	Harish Chandra Goel	D. A. V. Intermediate College, Dehra Dun	4407	55	Ditto.
17	Darshan Lall Gupta	Hindu University Engineering College, Benares	4353	54	Ditto
18	Jassa Singh	Agra College, Agra	4226	53	Ditto
19	Amarnath Sud	Sanatam Dharam College, Lahore	4089	51	Ditto
20	Bhim Sain Aggarwal	Gordon College, Rawalpindi	4059	51	Ditto
	Bishambhar Dayal Gaur	Jaswant College, Jodhpur	5127	64	Ditto
		(*Full marks* 6360)			
	Lieut. Jogendra Singh Dhillon	Indian Military Academy, Dehra Dun	4164	65	
	Lieut. Amar Datt	Ditto	4160	65	Honours Diploma as Civil Engineer
	Lieut. M. Anwar Khan	Ditto	4136	6[illegible]	

1939

No.	Names	Where educated	Marks gained	Per cent	Remarks
	Overseer Class, Second Year (*Full marks*—4,200)				
1	Jitendra Kumar Mital	Meerut College, Meerut	3181	76	Higher Certificate as Overseer Silver Medal and Rs.100 for General Merit Rai Bahadur Kanhaiya Lal Silver Medal for best Indian student who stands 1st in the class The Durga Dass Dutt Silver Medal for best Indian student obtaining Higher Certificate Silver Medals for Surveying, Drawing, Workshops (Group V), and Project
2	Kailash Chandra Jain	Meerut College, Meerut	3052	73	Higher Certificate as Overseer Rai Bahadur Kanhaiya Lal Silver Medal for Indian student who stands 2nd in the class Silver Medal for Mathematics (Elementary) Fairley Memorial Silver Medal for Applied Mechanics Sullivan Memorial Silver Medal for Mechanics
3	Tara Chand	N R E C College, Khurja	2998	7	Higher Certificate as Overseer Silver Medals for Descriptive Engineering and Accounts
4	Jai Prakash	Meerut College, Meerut	2973	71	Higher Certificate as Overseer Keay Memorial Silver Medal and Rs 18 for Estimating
5	Prem Narain Tayal	Government Intermediate College, Allahabad	2920	70	Higher Certificate as Overseer.

1939

No.	Names	Where educated	Marks gained	Per cent	Remarks
6	Hari Krishna Gupta.	P. B A. S. High School, Hathras.	2825	67	Higher Certificate as Overseer. Silver Medal for Accounts.
7	Niranjan Lal Sharma	D N High School, Meerut	2793	67	
8	Devi Shankar Varma.	A.-V. High School Anupshahr.	2740	65	
9	Brij Bhushan Lal.	*Government High* School, Muzaffar-nagar.	2720	65	Higher Certificate as Overseer.
10	Raghuraj Singh	Udai Pratap College, Benares	2692	64	
11	Om Prakash	D. A.-V. High School, Muzaffar-nagar.	2691	64	
12	Kailash Chand	*Meerut College,* Meerut.	2686	64	Higher Certificate as Overseer. The Puran Mal Silver Medal for Public Health Engineering
13	Jai Prakash Goel.	Meerut College, Meerut.	2679	64	
	Om Prakash Kansal	Meerut College, Meerut	2677	64	
	Bal Krishen	D N. High School, Meerut	2676	64	
16	Harish Chandra Gupta.	G. C O. High School, Roorkee.	2664	63	Higher Certificate as Overseer.
17	Gulzari Lal Goel	Kashi Ram High School, Saharanpur	2650	63	
18	*Satya Prakash* Maithel.	*Meerut College,* Meerut.	*2639*	*3*	
19	Ram Prasad Gupta	S. D. High School, Etawah.	2637	63	
20	Kailash Chandra.	Government Intermediate College, Moradabad.	2597	62	
21	Ranbir Singh	*Meerut College,* Meerut.	2590	62	

1939

No.	Names	Where educated	Marks gained	Per cent.	Remarks
22	Om Prakash Gupta.	D S Intermediate College, Aligarh	2580	61	Higher Certificate as Overseer.
23	Shiva Kumar Sharma	Government High School, Muzaffar nagar	2578	61	Ordinary Certificate as Overseer
24	Jagdish Saran Gupta	Government Intermediate College, Moradabad	2567	61	
25	Sia Ram Sharma	Government C O High School, Roorkee	2553	61	
26	Shiam Lal	Meerut College Meerut	2543	61	Higher Certificate as Overseer.
27	Rameshwar Das	H A V High School Deoband	2541	60	
28	Chander Sen	Kashi Ram High School Saharan pur	2530	60	
29	Om Prakash Gupta.	K E M U J Intermediate College, Lakhaoti	2529	60	
30	Dhaneshwar Rastogi	Meerut College, Meerut	2500	60	
31	Mitra Sen	B N S D Intermediate College, Cawnpore	2491	59	
32	Om Prakash Jain	Government C O High School Roorkee	2485	59	
33	Bhawani Prasad Goel.	Jat Intermediate College, Lakhaoti	2477	59	Ordinary Certificate as Overseer
34	Jayanti Prasad Goyal.	N. R E. C. College, Khurja.	2465	59	
35	Prakash Chandar Jain.	Denney's High School, Rawal pindi	2437	58	

1939

No.	Names	Where educated	Marks gained	Per cent.	Remarks
36	Mukhtar Singh Ikhtar.	J. V. High School, Baraut.	2434	58	Ordinary Certificate as Overseer.
37	Maheshwar Prasad Srivastava.	D. A.-V. High School, Cawnpore	2432	58	
38	Padam Prasad Jain.	D. N. High School, Meerut.	2362	56	
39	Hukam Chand Jain.	K. R. High School, Saharanpur.	2349	56	
40	Brij Gopal ..	Government C. O. High School, Roorkee.	2324	55	
41	Jagdish Prasad Agarwala.	D. A.-V. Intermediate College, Dehra Dun.	2305	55	
42	Jodh Singh Negi	Ditto ..	2298	55	
43	Saiyid Riazul Hasan Burney.	Muslim University, Aligarh.	2284	54	
44	Muhammad Wasim Qureshi.	Jubilee Intermediate College, Lucknow.	2100	50	

1939

No.	Names of students	Remarks
	DRAFTSMAN CLASS, THIRD YEAR	
1	Anand Singh Bisht	Certificate as Draftsman in 1st Division. Silver Medal and Rs 30 for Best Draftsman Qualified in Estimating
2	Tirloki Nath	Certificate as Draftsman in 1st Division. Silver Medal and Rs 20 for 2nd Best Draftsman Qualified in Estimating
3	Raghubir Sharan	Certificate as Draftsman in 2nd Division Qualified in Estimating
4	Shyam Sundar Misra	Certificate as Draftsman in 2nd Division Qualified in Estimating
5	M Hamid Khan	Certificate as Draftsman in 3rd Division. Qualified in Estimating

1939.

PERCENTAGE OF MARKS OF STUDENTS.

The following table shows the percentages of marks gained by the various classes for the last five years and the numbers that qualified —

Year	Civil Engineer Class									Overseer Class					
	3rd Year			2nd Year			1st Year			2nd Year			1st Year		
	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks	Highest marks	No qualified	Average marks
1934-35	76	16	64	79	16	66	78	18	66	71	25	60	80	29	56
1935-36	76	16	62	76	18	65	83	20	64	71	27	57	78	21	55
1936-37	72	18	63	82	21	69	81	24	66	70	22	58	83	36	63
1937-38	78	21	66	79	25	65	80	31	65	78	36	60	76	42	59
1938-39	73	24	59	78	31	64	81	34	66	76	44	62	86	41	69

ANNUAL REPORT

FROM

MAJOR C D REED, R E,
PRINCIPAL
THOMASON COLLEGE OF CIVIL ENGINEERING
ROORKEE,

To

THE DEPUTY SECRETARY TO GOVERNMENT,
UNITED PROVINCES
EDUCATION DEPARTMENT

Dated Roorkee 15th July 1939

SIR

I HAVE the honour to forward herewith the annual report on the Thomason College of Civil Engineering at Roorkee for the session 1938 39 together with the statement of accounts for the financial year ending 31st March 1939

ADMINISTRATION

2 The following non officials and officials were members of the College Advisory Council during the session

(a) Mr M R Richardson C I E I S E President until his retirement from Government service when his place was taken by Mr T M Lyle, B I C I E, I S E from 1st March 1939

(b) Lt Col W deH Haig C I E D S O until his retirement from Government service when his place was taken by Mr L B Gilbert, B SC, I S E from 16th March 1939

(c) Lt Col R S Weir, M A B Sc (Glas), I E S, Director of Public Instruction, U P, until proceeding on leave pending retirement, when his place was taken by his successor, Mr J C Powell Price, M A, I E S, from 6th April 1939

(d) Thakur Phul Singh Saheb B A, LL B, M L A, of Saharanpur, representative of the Legislative Assembly

(e) Pandit Keshava Deva Malviya, M Sc M L A of Dehra Dun representative of the Legislative Assembly

(f) Mr Gerald Lacey B Sc M INST C E I S E, representative of the Institution of Civil Engineers

(g) Rai Bahadur Chhuttan Lal M I E representative of the United Provinces Branch of the Institution of Engineers India

(h) Mr F A Farquharson, I S E representing the Punjab Government

(i) Dr N N Godbole, M A B Sc PH D (Berlin), *nominated by the United Provinces Government representing University Education*

(j) Mr H J Amoore, I S E Principal of the College and *ex officio* Secretary until proceeding on leave pending retirement when his place was taken by Major C D Reed, R E

A meeting of the Council was held on 16th July 1938

No further meeting was held during the period since it was known that a Reorganization Committee was to be formed

Special Committee—The proposals submitted by the Special Committee referred to in the last report were not accepted by Government

Reorganization Committee—A committee appointed by Government is now sitting, with specified terms of reference

The Committee visited Roorkee on the 7th, 8th, and 9th of July 1939, and examined me on two separate dates. At the request of the Committee I submitted certain proposals etc for discussion according to their terms of reference A copy of these is attached to this report

BOARD OF STUDIES

The Board met on various occasions during the session, assisted the Principal by offering their advice and opinions on various matters connected with the internal working of the College

COLLEGE STAFF

The following changes etc occurred in the College Staff during the session

Major C D Reed R E relieved Major H Williams, R E, as Officer in charge of Indian Commissioned Officers and Professor of Civil Engineering with effect from 6th November 1938

Mr M L Misra was invalided from the service on 14th December 1938 and his duties as Lecturer in Electrical Engineering were shared by Lt Col J Crawford and Mr B L Sharma

Mr H T Cumming was invalided from the service on 13th February 1939, and his duties as Assistant Professor of Survey and Drawing were taken over by Mr S R Singh

Major J Barnett retired on 7th March, 1939, and his duties as Personal Assistant to the Principal were taken over by Mr S R Singh

Mr P Chakravarti proceeded on leave pending retirement on 6th April, 1939

Mr Amoore proceeded on leave pending retirement and handed over his duties as Principal to Major C D Reed R E, with effect from 5th May, 1939

Mr Raja Ram resigned from Government service with effect from 8th May 1939 and his duties as Professor of Civil Engineering were taken over by Major C D Reed R E

The following officers also took leave during the session

Mr B D Puri leave on medical certificate from 18th January to 5th April 1939

Mr P L Sharma from 27th January to 29th February, 1939

The question of shortage of staff has already been put forward on many occasions and unless early steps are taken to remedy this it will not be possible for the College to reopen next session

DEPARTMENTS

The departments into which the College is divided remain unaltered Proposals have been made to the Reorganization Committee which involve certain radical changes in this connection and I strongly advise their serious consideration

CIVIL ENGINEERING

General—The normal instruction has been carried out but owing to the serious depletion of staff in this department the quality of the instruction has deteriorated considerably With the reversion to Military duty of Major C D Reed, R E on 16th July 1939 Mr S R Singh will be the only Civil Engineer left on the staff of the College

It was intended to introduce the new revised Syllabus for the Civil Engineering class from the beginning of next session With the inevitable dislocation due to an almost entirely new staff in this department I recommend that the introduction of the new syllabus be postponed for another year

Projects—The 3rd year students were given the usual Minor and Major projects

The Minor set by Major C D Reed R E was for the design and construction of a new Civil Engineering Class Club The results were disappointing

The Major set by Mr W F Walker I S E was for the survey and construction of a new road

Mr Walker s report is as follows

Report on the major project for the Civil Engineering Class third year 1938-39

Students were required to prepare a complete project on which tenders could be invited for the construction of a first class metalled road from Deoband to the provincial road near Manglaur

2 The component parts of the project were all enumerated and marks have been allotted to these parts

3 On the whole the projects submitted were good but certain points call for criticism

(a) The reports were too long and contained much irrelevant matter

(b) The same specifications were repeated over and over again in the same project when a reference to the details already given would have sufficed

(c) Quantities were in most cases, worked out very carefully but often no abstract of these quantities was made so that the detail work was practically wasted

(*d*) Analyses of rates require much experience if they are to be valuable but on the whole this matter was bravely tackled. Half a dozen students avoided it.

(*e*) The abstracts showing the total cost of the project were really the most disappointing documents. All the details so carefully and laboriously compiled should have been collected but not half the students did this. The majority completely lost themselves in masses of unimportant detail and obviously worked without any time table and therefore left themselves with insufficient time to finish off their work.

(*f*) The index plans should have shown the road mileage; the position of the inspection houses; bridges and any new culverts but these things were rarely shown.

(*g*) The survey plans were very neat on the whole and many would do credit to an experienced draftsman even though more attention had been paid to making them attractive rather than useful. In most cases the plans had been neatly coloured but the colouring had no significance. In no case had the road land been coloured to distinguish between permanent and temporary acquisition or to show the existing road land clearly. It was difficult to tell from the plans whether full use had been made of the existing road land. Here again mileage was rarely shown nor were the proposed new works clearly indicated.

(*h*) The longitudinal sections were neatly drawn but in some cases the road embankment was made unduly high in an unnecessary and uneconomical attempt to keep the load dead level. Road gradients not exceeding 1 in 100 are scarcely noticeable. The country was flat on the

whole and the embankment need rarely have exceeded 2 feet in height In certain cases the levels shown on the longitudinal section did not correspond with levels required by the bridge designs

(i) The bridge designs provided the greatest scope for originality The calculations for the catchment areas were generally well done and due regard was given to the waterway provided by the adjacent canal bridge over the Kali Nadi It must always be remembered when design ing bridges that more is to be learnt from existing bridges over the same river especially if they are adjacent, than from theoretical calculations Most students decided that the lineal waterway should be 150 to 160 feet but there was great diversity of opinion about the spans to be adopted Three students provided 1 span three provided 2 spans six provided 3 spans two provided 4 spans, whilst eight provided 5 spans Unfortunately very few gave reliable figures of costs so that it is difficult to decide on the most economical spans Practically all provided well foundations except strangely enough those who chose one span Shallow open foundations were provided for these large spans although any damage to the foundations in these cases could endanger the whole bridge Safe and therefore deep foundations are specially necessary for single span designs

In practice trial borings would be taken to show the material through which the foundation wells had to be sunk and the depth of the foundations would depend on these borings As a general rule the most economical bridge would be that in which the cost of the superstructure was equal to that of the foundations including wells and abutments

It is probable that R C beams of medium span would be most economical in this case and big arches are not quite suitable for this site

Unless the borings showed the soil to be specially good it is probable that the wells would have to be sunk lower than the 20 feet below bed level which most students provided

In most cases unnecessary dead load was added to the bridges in the form of some 12" of cushioning and metal ling In very few cases was the concrete road slab thickened to carry the traffic direct

(g) The drawings for the type culverts were of course straightforward though it was surprisingly difficult to find out the thickness of slab or arch from many plans Important dimensions were not uncommonly omitted

(h) Most students supplied lists of bench marks but quite a number failed to give a list of existing culverts whilst few commented on the condition of these culverts

(l) The alignment was fixed by the existing road and required little adjustment It was surprising that no one investigated the possibility of making a straight approach to Deoband railway station thereby avoiding several sharp bends in the road

(m) Only one student gave a detailed census report Most contented themselves with saying that it was not worthwhile taking the census and then proceeded to show that there might be 500 tons of traffic per day

(n) As might be expected the designs for the inspection bungalow and subordinates' rest house varied considerably On the whole they were very good though often the verandahs were on the north leaving the main rooms

exposed to the full force of the sun and little consideration was given to the prevailing wind The roofs were sometimes unduly thin and R B roofs were finished off with tiles or thin cement plaster instead of 3" to 4" lime concrete

Although one main room is adequate for a subordinate's rest house yet in many cases two or even three rooms were provided—often too near the inspection house In other cases the number of servants quarters was overgenerous

(o) Few students seriously considered the use of *kankar* as road metal although it is probable that it is available in the neighbourhood The proposals for arboriculture were on the whole sound though *half a dozen students ignored* this matter whilst half the students failed to offer any suggestions for reducing the cost of their project although this was an easy way to earn marks

4 The project on the whole gave evidence of the expenditure of a vast amount of industry without however sufficient evidence of a directing brain There were pages and pages of specifications many being mere repetition pages and pages of earthwork *calculations many of which were left incomplete* and valueless for want of an abstract, minute details of a cornice or dado were given but it was the exception to find an abstract of cost or an index showing where sub heads were to be found

Notwithstanding the foregoing criticisms the projects on the whole were well done

5 The project which has gained the highest marks is better balanced and better presented than the others All the component parts of the project have been completed showing that the work has been done systematically The drawings

are neat but not outstanding, the bridge design for the inspection bungalow is good but certainly not the best More common sense has been used in the preparation of this project than in any of the other cases

The project which stands second is also very good The road embankment is rather higher than necessary and the abstract of cost is incomplete It is not quite so well finished as the first

6 Eight other projects are a little behind the two leaders in quality

The remainder tail off somewhat but the standard on the whole is good The main defect of all the project is that there is too much padding and the projects would be more useful if half the matter were cut out

7 I would suggest that for future projects the time allotted for drawing work should be reduced and more time should be devoted to writing the report completing the abstract indexing and generally finishing off the projects

Visits to works—As far as funds permitted visits were paid to various engineering works by 2nd and 3rd years as under

Civil Engineering Class, 3rd year	Muhammadpur
	Haveli Project
	Water and Sewerage Disposal Works Delhi
	Activated Sludge Sewage Disposal Scheme at the Agricultural Research Institute

	Reservoir at Ridge and Road and Drainage Work in Western City Extension, Delhi
Civil Engineering Class, 2nd year	Kotdwara
	Asafnagar
	Hardwar Headworks

These visits are of the greatest value for instructional purposes

Survey—The usual 2nd year Annual Survey Camp was held this session from 21st January to 11th February, 1939 in the vicinity of Bhangeri village The proximity of the Camp site to the College made it possible for students to return to their hostels every evening

Chemistry—There is nothing to report from this department The necessity for Chemistry as a separate subject is very doubtful and it is difficult to justify the existence of a separate Lecturer in this subject who is employed on an average 4 hours a week only

MATHEMATICS—PURE AND APPLIED

The instruction in this department has been carried out as well as possible under the present system

Proposals have been made to the Reorganization Committee for radical changes in the constitution of this department These involve the transfer of all Applied Mathematics to the Civil Engineering Department which is the normal practice in engineering institutions If these proposals are adopted the mathematical department will be responsible for instruction in Pure Mathematics only, and in this case it will be quite unnecessary to have a Professor of Mathematics for this purpose

Physics—This department is at present under the control of the Mathematics Department

The same remarks apply *in toto* as are given against Chemistry above

MECHANICAL AND ELECTRICAL ENGINEERING

This department has carried on as efficiently as possible considering the fact that they have been without a Lecturer in Electrical Engineering during the whole session

A special grant of Rs 6 700 has just been received for electrical equipment and this will go far towards bringing the electrical laboratory up to date

OVERSEER CLASS

The situation as regards staff remains the same and the Civil Engineering Class staff have had to assist in the instruction of the overseers

Proposals have been submitted for the abolition of a separate Overseer staff and for bringing the overseers under the control and instruction of the Civil Engineering Department

As usual various designs were carried out by the 2nd year culminating in the project which was set by Major J Barnett This was for the conversion of an old racket court into an up to date swimming bath

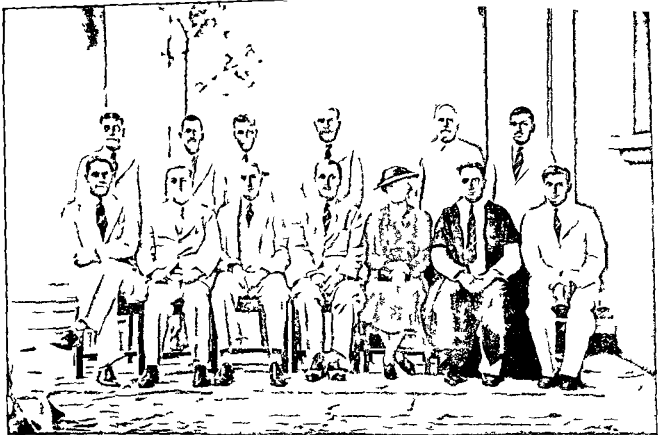
The results were satisfactory

DRAFTSMAN CLASS

This class was continued as usual but the standard is not high

SPORTS AND GAMES

This has been a successful year in outdoor activities and particulars of outstanding achievements are referred to in my Convocation address



His Excellency the Governor of the United Provinces and Lady Haig with Director of Public Instruction United Provinces and Staff

BUILDINGS AND ESTATE

Maintenance has been carried out as far as possible with the existing annual allotment A number of the College buildings, particularly the residential ones, are badly in need of special repairs, which it is impossible to carry out from the small annual maintenance grant Unless a special separate allotment is made for this purpose at an early date a number of buildings will soon become uninhabitable and will have to be completely reconstructed

Two original works have been sanctioned and funds allotted

(1) Sanitary Annexe for Printing Press employees

(2) Kitchen block for bungalow no 25

Both these works were completed at a cost of Rs 620 and Rs 1,335 respectively.

ANNUAL CONVOCATION

The Annual Convocation and prize giving was held on Saturday 15th July, 1939 at 11 a m in the College Convocation Hall

His Excellency Sir Harry Haig, Governor of the United Provinces honoured us by his presence and presided at the Convocation

On his arrival at the College at 10 45 His Excellency was received by a Guard of Honour provided by the K G V's O Bengal Sappers and Miners

After introductions to the members of the staff His Excellency accompanied by Lady Haig proceeded to the Convocation Hall where the Principal, Major C D Reed, R E , opened the proceedings with the following address

YOUR EXCELLENCY, LADIES AND GENTLEMEN

It is with a feeling of pride that
Excellency on this, your first visit t

HEALTH

The health of the students has been good except for the usual crop of minor ailments which are produced on mornings when students are required to attend Physical Training

DISCIPLINE

One student was detected cheating in an examination and was expelled from the College

There have been several cases of serious breach of discipline during the past session both in the Civil Engineering Class and Overseer Class, and the general standard of discipline and tone of the College is at a low level

This is due mainly to two reasons

(1) Political and other outside influences, and interference by outside persons

(2) Bad example set by certain members of the staff, and lack of adequate control owing to shortness of senior members of the staff

Unless considerable changes are made next session the discipline, etc of the College will deteriorate rapidly, and serious trouble will ensue

CIVIL ENGINEERING STUDENTS CLUB AND MESS

These two separate institutions continue to serve a very useful purpose in the corporate life of the College

OVERSEER CLASS CLUB

This Club is not serving the purpose for which it is intended owing to communal differences amongst the members

The control of this Club by the College authorities must be tightened up, and if this fails to improve matters the Club should be closed

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as Governor of the United Provinces and I wish to express on behalf of my staff and the students, their appreciation of the interest in the College which your Excellency has shown in consenting to preside at our Annual Convocation This is particularly gratifying at the present moment when we have been passing through a rather difficult period owing to shortage of staff and other causes Your presence here today Sir will gives us fresh hope and energy

I desire also to thank the distinguished visitors, official and others, who have shown their interest in the College by being present here today We welcome outside interest in our institution provided always that it is of the right kind

We opened this session with three vacancies in the permanent sanctioned staff One Professor of Civil Engineering one Lecturer in Electrical Engineering and one Instructor Overseer Class Since then we have lost in succession Mr Cumming Assistant Professor of Survey and Drawing Major Barnett Personal Assistant to Principal, Mr Chakravarti, Lecturer in Mathematics Mr Raja Ram Professor of Civil Engineering and Mr Amoore our Principal, who has proceeded on leave pending retirement So far none of these gentlemen have been replaced and it has been impossible to carry on without a considerable reduction in efficiency and standards

As you are aware, Sir, a Committee of Reorganization has recently been appointed to go into the affairs of the College and I earnestly hope that they will make the question of staff their first immediate consideration

It is with the greatest regret that I have to announce the death of Mr Cumming which occurred a few days ago Mr Cumming has been a member of the staff of this College for over 25 years and was forced to retire due to ill health in

January last On behalf of the staff and students I would like to express my deepest sympathy with Mrs Cumming in her great loss

Certain important changes have occurred during the past year

(1) New scales of pay have been introduced for all future entrants to the College staff These are considerably lower than the existing scales, which have already suffered from extensive cuts

(2) The paid apprenticeships for Overseers have been suspended Hitherto paid apprenticeships have been guaranteed by Government to those passing out at the top of the list each year The withdrawal of this concession is likely to affect adversely the type and quality of Overseer student coming to the College

(3) For many years the Punjab Government have been sending their young men to this College to train as Civil Engineers, and their presence has always been welcomed, and has led to a spirit of healthy rivalry and competition, The Punjab Government has now decided to train their own engineers, and their presence here will be sadly missed

(4) The Defence Department of the Government of India have decided to withdraw from the end of this session, the Officers of the Corps of Indian Engineers who are undergoing post-graduate training in the College

I propose now to review briefly the work and discipline of the past session

During the past session there have been one or two unfortunate incidents which I fear may be regarded as an indication that the discipline and tone of the College are deteriorating It has always been a source of pride and a tradition in



Olympic Team
1938 39

this College that we maintain a high standard of conduct and discipline, and I hope that the future will show that the standards of the College in this respect are as high as ever

In the work of the session there is no outstanding achievement by any individual student

Of the Civil Engineer Class 3rd year, 9 students have obtained an Honours Diploma 15 the ordinary Diploma and one student has unfortunately failed

In the Civil Engineer Class 2nd year and 1st year all the students have qualified and are eligible to continue their studies in the next session

In the Overseer Class 2nd year 28 students obtained the Higher Certificate and the remaining 16 the Lower Certificate

Of the 45 students in the Overseer Class 1st year, 5 students have failed to qualify

I congratulate all those who have been successful and particularly those who are passing out of the College and I wish them the best of luck in the future

In outdoor activities we have had a successful year

The College U T C Platoon at Camp in Delhi carried all before them In the competition held by the 9th Delhi Battalion for the Platoon efficiency cup they scored the highest marks for Arms Drill Line inspection Bayonet fighting Squad drill and Signalling A fine achievement

It is a matter for regret *that the sanctioned strength of our* U T C contingent is only 32 and thus many young men are deprived of this excellent form of moral and physical training A proposal to increase the strength to one Company has been placed before the Committee of Reorganization and I hope that it will receive *their favourable consideration*

The annual sports were held in December last and the regatta in June Rowing is increasing in popularity as a hot weather sport In the annual sports the "Lion Trophy" for the best all round athlete was won by Chaman Lal of the Civil Engineer Class 1st year, who also broke the College record for 1 mile which has remained unchallenged for 29 years I congratulate him on his splendid performance

The annual Olympic contest with the Royal Engineers was won by the College for the third time in succession and the College have now won the cup ten times to their opponents' nine Except for the cricket which was drawn the College won all the events

In conclusion I wish to thank all members of the staff for their support and co operation during the short time that I have been acting as Principal In particular I wish to thank Mr Shiva Raj Singh, who in addition to many other duties, has been acting as my Personal Assistant, and by cheerfully accepting any task that has been thrown on to him, has made it possible for me to continue the instruction and administration of this College

With the departure of the Officers of the Indian Engineers my appointment in the College also ceases, and I take this opportunity of wishing you all good bye

Your Excellency, with your permission I will now invite you to address this assembly, and distribute the prizes

MAJOR REED, LADIES AND GENTLEMEN—

I thank you for the very cordial welcome you have extended both to myself and Lady Haig on this our first visit to the Thomason College It has been perhaps somewhat remiss of me in the course of nearly five years not to have paid you an official visit before now But it may be an advantage that

I have been able to time my visit at an important moment in the long history of this great College, when certain changes are inevitably taking place and when we have to plan comprehensively for the future I am glad to think that my presence among you today may be regarded as an assurance of my vivid interest in the work of your College and my full confidence in its future

I have often heard of the admirable buildings and the striking setting of this College but I must say that what I see surpasses my expectations It has been well said that the College owes its birth to the waters of the Ganges Sited here, facing those splendid mountains from which that great river takes its source and standing close beside the Upper Ganges Canal itself a masterpiece of engineering and a constant reminder of the work to which many of the students look forward the College could not have been better placed to serve as a training ground and an inspiration for future engineers In its buildings, its grounds its equipment and its traditions we have here a College of which any country may be proud and of which our province is proud today

On the human side the College has a fine tradition The list of your Principals and staff contains a number of distinguished names Many of them have been members of that famous and versatile body the Corps of Royal Engineers whose achievements in the arts of peace in all quarters of the globe have been no less remarkable and varied than its outstanding services in the field Your roll of former students contains the names of many who have risen to great eminence in their profession and left as monuments of their skill works of permanent benefit which will cause their names to be remembered for generations As examples of distinguished sons of this College I may recall the names of Sir William Willcocks and

Sir Ganga Ram There are many others who have made their names in the engineering services particularly of this province and the Punjab including two comparatively recent Chief Engineers in this province, Mr Vernères and Raja Jwala Prasad, and one of our present Chief Engineers, Khan Bahadur Abdul Aziz and a former Chief Engineer of the Punjab Rai Bahadur Bawa Natha Singh

Your Principal s report recalls a year of interesting and creditable activities It also indicates that the College has been passing through one of those difficult periods which occur from time to time in the life of all such institutions A change in the Principalship is always in itself an important landmark in any educational body since so much depends on the personality and leadership of the head of such an institution The past session has seen to our regret the retirement on superannuation of Mr Amoore after six and a half years of able and devoted work for the welfare of the College The Government are at present engaged in the difficult task of choosing his successor and I can assure you that they do not underestimate the importance of the decision that is to be made Meantime we are fortunate in having been able to secure the services of Major Reed R E, to carry on these responsible duties up till the end of the present session and I should like to thank him for the determination and foresight with which he has thrown himself into this task As Major Reed has mentioned, the College has been in difficulties during the past year owing to shortage of staff There have been a number of retirements at the end of their service of those who have done valuable work and been familiar figures here for many years and I should like to add an expression of my regret and sympathy at the lamented death of Mr Cumming It is not an easy task to fill the vacancies but with the aid

of the Public Service Commission I have every hope that they will all be filled before the next session starts and that the College will no longer suffer from the temporary handicap of a staff inadequate in numbers I am glad to have been told by those who are in a position to know that in spite of these temporary difficulties which must of course have an effect on the work as Major Reed has pointed out the College still maintains its high standard generally and can claim to be as it has been indubitably in the past the best engineering college in the whole of India

We have recently lost owing no doubt to a natural development of the forces of provincial autonomy the Punjab contingent which for many years has formed a notable section of our students We have also received about a fortnight ago an intimation from the Defence Department that they have made other arrangements for the post graduate training of the Indian Cadet Officers to whom for some years we have been extending the facilities that the Thomason College affords We shall regret the disappearance of the Punjab student and of the Indian Cadet Officers But these are after all only adventitious additions to our strength The College while glad to extend its assistance as long as that assistance is required was organised for far more important purposes than these and I should like to remind you what a vital part it plays in the life and prosperity of this province The main object for which this College is organised is to provide our Government with an efficient public spirited and devoted body of engineers to carry out those engineering functions which as the years go on become more and not less crucial for the development and well being of our province We have to see that we do not fail to pass on to future generations a body of public servants imbued with the same spirit and equipped with the same knowledge that has marked out their predecessors Let u

think for a moment of the tasks for which the students of this College are striving to fit themselves We have in the first place a remarkable system of irrigation works, the foundation of the prosperity of a large part of the province There is the great Ganges Canal—the first irrigation canal of this magnitude to be conceived in any part of the modern world, a system which for a period of eighty years has been steadily and wisely developed, so that now it irrigates something like 2 million acres in an area which at one time was subject to recurrent and devastating famines and is now regarded as perhaps the most prosperous part of this province Then there is the Sarda Canal, which was opened only a little over ten years ago and which is designed to provide for the irrigation of between a million and a quarter and a million and a half acres That great system has still not reached its full development, but we irrigate from it already well over a million acres, and my Government are intending this year to embark upon an extension of it which will enable the surplus water in the upper tracts to be carried to the thirsty lands which are now just out of reach of the canal at its lower end Thirdly, there is a brilliantly conceived and finely and rapidly executed system of the tube wells completed hardly two years ago and giving an addition of some 600,000 acres to our effectively irrigated area We had a most convincing demonstration during the last *rabi* season of the immense value of this tube well system in the protection of an important part of the province from the effects of drought This network of 1,500 tube wells and the electric grid by means of which it is operated form a monument to the courage the imagination and the energy of Sir William Stampe who was for a time a Professor here and always took a very vivid interest in the efficiency of this College which provided him with so many of the young engineers by whose efforts this scheme was executed The hydro-electric grid

and tube wells have presented to our Irrigation Department engineers many new, intricate and fascinating problems, and have added to the demands that we shall make on this College for the training of our future engineers The system is one which is still growing In particular the demand for electricity for industrial and miscellaneous purposes is increasing with such rapidity that my Government have found it necessary to provide this year for the erection of a large new steam generating station so that we may be able to meet in full the present requirements of electricity for the area covered by the grid I need hardly emphasise the striking effects in the development and the prosperity of this area arising from the wise extension and growing use of electric power

So far I have been speaking of our Irrigation works and the connected electrical undertakings But there is another large branch of our engineering services the importance of which is going to be recognised more clearly every year We have perhaps in the past been a little slow in acknowledging how great is the influence of good road communications on the economic development of a province such as ours My present Government is very strongly impressed by the necessity of a large extension of our road system and a general improvement of its standards They have approved a scheme for the expenditure of 1½ crores of rupees over a period of three years which will involve the construction of 1 300 miles of new metalled roads For the execution and for the maintenance in good condition of these roads and our large existing mileage of roads we need a body of thoroughly efficient and honest engineers and here again we look with confidence to this College to provide us with the essential human element And in passing may I add let no one think that road engineers have not their problems to face under present condition which will test to the full their skill and imagination

We have reached, as I have mentioned before, a stage at which some review of the organisation and scope of work of this College is called for My Government have recently appointed a Reorganisation Committee under the chairmanship of Raja Jwala Prasad, a distinguished ex-student of this College, and I am sure we can look to this committee with confidence for wise and timely recommendations which it will be possible to put into effect with little delay Of one thing I can assure you, and that is that my Government recognising to the full the part that the Thomason College plays in the development and prosperity of the province is determined to take all such measures as are wise and practicable to maintain and increase the efficiency of this great institution

The profession for which you students are preparing is a fascinating but also an exacting one It demands imagination in designing, knowledge, clear thinking and foresight in planning, energy and resolution to overcome difficulties in construction Your work has to stand the test of time and to survive the onslaughts of the pitiless forces of nature It must fulfil the functions for which it was designed, it must justify the forecast and estimates on which its construction was started, and it must satisfy the accountant with his schedules of profit and loss Bad work will undoubtedly come to light Your bridge, your road, your dam are there for all to see If they fail, the responsibility and the discredit is yours and cannot be concealed There is no margin for guess work or mistakes Such a profession requires that its members *should be men specially chosen, prepared by a systematic and* rigorous training for their work It implies high standards of conduct and efficiency It implies membership of a body of workers and a pride in the good name of that body, a good name of which each individual must be a guardian The

training at Roorkee in the past has been designed to foster that sense of fellowship, professional brotherhood and professional pride It has aimed at encouraging the team spirit It has recognized the importance of outdoor sports and games in developing both physique and character It has sought to implant and maintain that essential discipline which comes from within, and is based not on complusion but on self respect and a regard for the good opinion of comrades whose respect is worth retaining I think that the good name of the College in the past and the successful careers of its students have owed much to these features of its training I hope that these features will continue I hope that your successors will feel, as I am sure that you feel a pride in the thoroughness and the rigour of the training through which you have to pass before you can join the ranks of qualified civil engineers I hope that they will feel that they are picked men trained for a picked profession It seems to me that a professional college like this whether it be a medical college or an engineering college, sets on its students a stamp that is different from others And the reason is that the member of these colleges have chosen their careers They have set before themselves their life work and they know that it is worth doing I trust that this great College will maintain its high traditions and I have every confidence that the province can continue to look to the Thomason College as the source of that careful lasting nation building work which it rightly expects from its engineers

His Excellency then distributed the prizes to the successful students

After the Convocation His Excellency visited various parts of the College buildings and estate and had Luncheon with the Principal at his house

In the evening His Excellency and Lady Haig attended a tea party held in their honour by the staff and students of the College and finally departed at 6 15 p m

His Excellency expressed himself well pleased with everything that he had seen during the course of this, his first visit to the Thomason College

I have the honour to be,

Sir,

Your most obedient servant,

C D REED,

Major, R E,

Principal.

APPENDIX I

Classified abstract of education payments in the United Provinces for the year 1938–39, *including March final,* 1939

Number of detailed heads	Payments		Rs	a	p
	D—Government Professional Colleges (a) Civil Engineering College Roorkee				
	(I) College Department				
	Pay of officers				
25	Principal (Charged)		24 000	0	0
26	Do (Voted)				
27	Professors (Charged)		10 065	7	0
28	Do (Voted)		34 920	10	0
29	Other officers (Voted)		80,434	11	0
30	Medical Officer special pay		595	0	0
31	Allowance to Instructors		629	0	0
	Total	Voted	1 16 579	5	0
		Charged	34 065	7	0
	Pay of establishment				
32	Instructors		2,470	8	0
33	Foremen Draftsman Mechanics etc		10 495	3	0
34	Passed apprentice overseers		6 186	7	6
35	Clerks		10 433	8	0
36	Servants		5 983	9	0
37	Medical establishment		385	0	0
	Total (Voted)		35 954	3	6
	Allowances and honoraria				
38	Travelling and other allowances (Voted)		7,414	4	0
39	Ditto (Charged)		167	0	0
40	Cost of passages (Voted)				
41	Ditto (Charged)				
	Total	Voted	7 414	4	0
		Charged	167	0	0
42	Grant in-aid— Contribution for passages of officers transferred from or to other Government departments (Charged)				
	Total (Charged)				
	Total College department Carried over	Voted	1 59 947	12	6
		Charged	34,232	7	0

Classified abstract of education payments in the United Provinces for the year 1938-39, *including March final,* 1939—(concluded)

Number of detailed heads	Payments		Amount		
			Rs.	a.	p.
	Total, brought forward	Voted ..	1,59,947	12	6
		Charged ..	34,232	7	0
	Contingencies				
43.	Purchase and erection of machinery workshops		14,291	3	0
	Laboratory				
44(a).	Purchases from England ..	..	..		
45(b).	Purchases in India ..	..	3,639	14	6
46.	Maintenance of generating station ..	..	4,176	10	0
47.	Survey expenses	..	2,215	9	0
48.	Material for industrial class ..	..	538	0	6
49.	Excursion charges of students ..	..	614	13	0
50.	Stores (in India)	..	412	2	6
51.	Prizes and fees	..	4,158	7	0
52.	Other supplies and services ..	..	4,826	11	0
53.	Customs duty on stores ..	..	40	0	0
54.	Contract	..	8,369	8	9
55.	Pay of menials	..	9,288	14	0
56.	*Non-contract*—(a) Purchases from England	..	..		
57.	Do. (b) Purchases in India	..	4,392	1	3
	Total (Voted)	..	56,963	14	6
	Total	Voted ..	2,16,911	11	0
		Charged ..	34,232	7	0
58.	*Deduct*—Contribution from other Governments for training of students ..	..	59,870	0	0
	TOTAL, ROORKEE COLLEGE	Voted ..	1,57,041	11	0
		Charged ..	34,232	7	0

Classified abstract of education receipts in the United Provinces for the year 1938-39, *including March final,* 1939

Guide letters	Heads of receipts	Amount
	F—Civil Administration, XXI—Education, Provincial	
	A—University	
		Rs. a. p.
503.	Fees, Civil Engineering College, Roorkee ..	29,444 14 0
	E—General	
	Miscellaneous	
511.	Examination fees. Civil Engineering College	5,476 8 3
513.	Workshops manufactures	172 13 0
	Rent on buildings	7,084 10 0
	Miscellaneous	8,083 14 3
	Income from endowments	463 14 8
	Receipts other than revenue .. .	225 9 0

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 1937–38

Receipts	Amounts	Expenditure	Amounts
	Rs a p		Rs a p
Manufacture .	388 8 0	Salaries of Assistant Professor of Mechanical and Electrical Engineering	8,513 4 0
Electric Light charges	6 840 14 0	Salaries of Lecturer in Electrical Engineering	7,581 15 0
		Salaries of Lecturer in Mechanical *Engineering*	6,927 2 0
		Salaries of Foremen and Assistant Foremen	6,588 4 0
		Salaries of Lines man	600 0 0
		Salaries of Store keeper	420 0 0
		Salaries of Electrical Laboratory Attendant	420 0 0
		Salaries of Electrical Laboratory boy	131 4 0
		Salaries of Mistri Water works	480 0 0
		Salaries of Work shop Guards.	629 5 0
		Travelling allowance	10 10 0

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 1937–38—(continued)

Receipts	Amounts	Expenditure	Amounts
	Rs a p	*Manufacture*	Rs. a. p.
		S and S. Purchase and Erection of Machinery Work shops	11,505 5 0
		S. and S Mainten ance of Generating Station	5,499 1 3
		S and S Laboratory and class charges	610 8 0
		S and S Laboratory Electrical Laboratory.	194 1 6
		S and S Cost of energy	5,229 15 6
		Contract Contingencies—Water-works	2,059 2 0
Total .	7,229 6 0	Total .	57,399 13 3

Manufacture account

Including credit sales of stock and instruction charges for students

	Rs a p		Rs a p.
Cash receipts .	388 8 0	Opening balance .	68 12 0
Unrealized balance	22 11 0	Labour	123 1 6
		Stock (including credit sales)	79 4 3
		Direct charges	120 2 4
		Profit on private works	19 14 11
Total ..	411 3 0	Total ..	411 3 0

Stock account

Opening balance	1,093 13 10	Issues to works including credit sales	79 4 3
Cash purchase ..	..	Closing balance ..	1,014 9 7
Total ..	1,093 13 10	Total ..	1,093 13 10

Statement of the annual accounts of the Thomason College of Civil Engineering Workshops, Roorkee, for the year 1937–38—(concluded)

Receipts	Amounts	Expenditure	Amounts
	Energy account		
	Rs a p		Rs a p
Cash receipts .	6,840 14 0	Cost of energy	5,229 15 6
Unrealized balance	26 12 0	Profit	1 637 10 6
Total	6,867 10 0	Total	6,867 10 0
	Tools and plant account		
Opening balance	94,620 7 0	Depreciation	9 609 0 0
*Purchases during the year	2,914 4 0	Closing balance	87,925 11 0
Total	97,534 11 0	Total	97 534 11 0

	Rs a p
* S and S Purchase and Erection of Machinery Workshops	2,567 8 0
S and S Maintenance of Generating Station	8 4 0
S and S Laboratory and Class Charges	298 8 0
S and S Electrical Laboratory	40 0 C
Total	2 914 4 0

TABLE I

Statement showing comparative results of entrance examinations for five years

Name of class	1934			1935			1936			1937			1938		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total
Civil Engineer Class															
Examined	4	46	50	4	*53	*57	1	*81	*82	1	*99	*100	1	*108	*109
Passed	1	18	19	2	*21	*23		*26	*26		*30	*30	1	*41	*42
Admitted { Privileged	1	17	18	2	*21	*23		*20	*20		27	27	1	32	33
Admitted { Unprivileged					1	1		4	4		3	3		1	1
Overseer Class															
Examined		74	74		84	84		174	174		272	272		257	257
Passed		31	31		32	32		48	48		46	46		74	74
Admitted { Privileged		28	28		32	32		40	40		45	45		40	40
Admitted { Unprivileged		5	5					2	2					3	3

* Including I M A G cadets

TABLE II

Civil English and Indian candidates including Defence Department from 1922 to 1938

Provinces	Came up for the examination		Passed the Entrance examination		Passed the Final examination		Total of all classes		
	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Engineer Class	Overseer Class	Came up	Passed the Entrance examination	Passed out
United Provinces	1 312	2 764	285	835	196	476	4 076	1 190	672
Punjab	1 099	27	269	5	20	2	1 1 6	274	04
North West Frontier	25	4	5		5		29	5	5
Bengal	8		1		1		8	1	1
Central Provinces	43		2		5		43	2	3
Burma	4		3		3		4	3	3
Central India	1	4		1			5	1	
Rajputana	14	1	3	–	1	1	9	3	2
Baluchistan	2	1					3		
Indian States	[illegible]	38	[illegible]	18		11	0	27	16
Bihar and Orissa	9	1	1				10	1	2
Delhi	45	8	7	1	7		3	8	7
Ajmer Merwara	11	15		8		5	26	8	5
Defence Department	16		12		3		16	12	3
Total	2 641	2 877	597	870	430	11	5 518	1 467	[illegible]

NOTE—For figures from 1880 to 1921 please refer to Thomason College Calendar for 1930

TABLE III.

Comparative statement showing numbers in College on 1st April of each year.

Name of class	1935			1936			1937			1938			1939		
	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total	British	Indians	Total
Civil Engineer Class	3	47	50	4	53	57	3	60	63	2	75	77	1	90	91
Apprentice Overseers		6	6		8	8		17	17		18	18		9	9
Overseer Class		60	60		62	62		63	63		86	86		90	90
Draftsman Class		3	3		3	3		10	10		16	16		19	19
Total	3	116	119	4	126	130	3	150	153	2	195	197	1	208	209

TABLE IV

Comparative statement of religious denominations of the Staff and students

Class	1934-35				1935-36				1936-37				1937-38				1938-39			
	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total	Christians	Hindus	Muhammadans	Total
	5	35	3	43	6	33	3	42	7	31	3	41	5	35	2	42	3	31	3	37
ts .	3	99	11	113	4	110	8	122	4	122	10	136	3	165	11	179	2	176	22	200
ntice Overseers		4	2	6		6	2	8		17		17	..	17	1	18		9		9
Total	8	138	16	162	10	149	13	172	11	170	13	194	8	217	14	239	5	216	25	246

Comparative statement showing the transactions of the various College funds from 1st April, 1938 to 31st March, 1939.

(The property of the funds is excluded.)

Name of fund	Balance on 1st April 1938	Receipts during the year 1938–39	Total	Expenditure during the year 1938–39	Balance on 31st March 1939	Remarks
il Engineer Class	Rs a p	Rs a p	Rs a p	Rs a p	Rs a p	
ess, Anglo Indian*	243 15 5	311 3 4	555 2 9	165 7 3	389 11 6	*The account closed in October 1938 and formed into a new fund called "Passing out Scholarship Fund for European and Anglo-Indian students".
Mess, Common	467 5 2	8,347 3 9	8,814 8 11	8,183 12 9	630 12 2	
Recreation	2,907 12 9	9,986 11 6	12,894 8 3	8,188 15 9	4,705 8 6	
Civil Engineer Class Club.	1,950 2 9	3,082 12 6	5,032 15 3	3,280 5 3	1,752 10 0	
Overseer Class						
Recreation and Club	1,016 12 2	3 163 3 6	4,178 15 8	2,086 1 0	2,092 14 8	
Boating .	932 11 5	766 4 0	1,698 15 5	1,284 12 9	414 2 8	
Total ..	7,517 11 8	25,657 6 7	33,175 2 3	23,189 6 9	9,985 11 6	

TABLE VI

Statement showing the number of candidates registered and the number who have obtained employment during 1934 to 1938

Grade.	1934		1935		1936		1937		1938	
	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed	Registered	Appointed
Engineers		1	2	1	9	[illegible]	2	2	8	
Upper Subordinates	9			2						
Overseers	1	3	3	4	8	6	13	8	13	3
Lower Subordinates			3	1	1					
Draftsmen	2	1	4	1	[illegible]		2	1	1	
Total	5	7	14	[illegible]	13	8	17	11	[illegible]	3

TABLE VII.

Statement showing applications and appointments of candidates during the year 1938

Grade	Railways	Military works	United Province: Provincial	United Province: Irrigation	United Province: Municipal and district board miscellaneous	Punjab: Provincial	Punjab: Irrigation	Punjab: Municipal and district board miscellaneous	Delhi	Bengal	Bombay	Madras	North West Frontier Province	Miscellaneous	Local administration: Assam	Local administration: Bihar and Orissa	Local administration: Central Provinces	Local administration: Berar	Native states	Total
Applications from employers																				
Engineers	3				2			1						6					2	14
Overseers	4	3		3	7			2	3					1					7	30
Draftsmen	6			4				1						1					7	19
Total	13	3		[illegible]	9			4	3					8					16	63
Appointments through College																				
Engineers																				
Upper Subordinates																				
Overseers	1	1	1						1											3
Lower Subordinates																				
Draftsmen																				
Mistris																				
Press Workers																				
Photo Mechanical operators																				
Total	1	1	1						1											3

APPENDIX IX (a)

Item (i) "To enquire generally into the organization of the College and to submit proposals to Government for improving its efficiency"

The terms of reference for this item are wide, and at such short notice it is not possible to do more than touch briefly on a few points As far as I know no member of the College Staff is on the Committee of Reorganization, and in the absence of some one who is familiar with the present situation, it will be difficult to make much useful progress with this item, unless the Committee are prepared to spend some time at Roorkee

The following general heads are given and detailed proposals made under each head

A —Staff

B —Control

C —Students.

D —Methods of Instruction, Equipment, etc

It is of course quite useless to consider any other proposals until an adequate and efficient Staff are provided It has already been intimated to the Director of Public Instruction, that, unless immediate steps are taken to remedy this, it will be difficult for the College to re open at the beginning of next Session

A—Staff

Detailed proposals for the re-organization of the Staff have been worked out and are given in the form of a separate statement, which also contains certain general information about the College, which will be of use to the Committee.

For some time past the College has been required to carry on with several unfilled vacancies on the present sanctioned staff It is obvious that such a state of affairs can only lead to inefficiency and react most adversely on the students, whose welfare should be our first care It would appear that those, who control such matters are under the impression that numbers and hours of work are the sole basis on which to judge the necessity or otherwise of replacing members of the Staff who retire or revert to other employment It cannot be too strongly stressed that this attitude is entirely wrong when you are dealing with a Technical institution of this nature Engineering is a profession, which is highly specialized and one man cannot be expected to be a specialist in more than one or two major branches of Engineering For efficient teaching it is essential to have the man, who is expert At the present moment out of a total Staff of 8 only two are qualified Civil Engineers and these two men are performing the duties of Principal and Personal Assistant, in addition to trying to carry on with the teaching of all subjects in Civil Engineering which comprise over 60 per cent of the actual instruction in the College

The main point in the new proposals for Staff is that we shall eliminate the surplus mathematicians chemists physicians etc and replace them, where necessary, by properly qualified Engineers The specialized chemistry and physics required for engineering purposes should be taught by Civil, Mechanical or Electrical Engineers, who are quite capable of doing so, as it is part of their basic theoretical knowledge In the same way applied mechanics, at present taught by pure mathematicians, should be taught by qualified Engineers, i e the same men who will later take the students on to the practical application of the Theory of Structures.

There are two other important points in connection with the Staff—

(*a*) Salary.

(*b*) Up to-date professional knowledge.

With regard to (*a*), it is extremely doubtful, whether the new very low scales of salary will attract the best men, and we must have the best In order to train Civil Engineers capable of holding posts equivalent to those of officers of the P W D it is essential to have men, who are *above the average* of the ordinary P W. D man "The teacher must be superior to his pupil' The present low salaries do not offer an inducement for the right type of man to come forward for the job

As regards (*b*), some of the past and present members of the Staff are much behind the times in their professional knowledge and there is a tendency for a man once appointed to a permanent job, to sit back and relax Engineers must keep themselves up-to-date, and though this is partly a matter for the individual, it is considered that some compulsory refresher training should be carried out by all members of the Staff from time to time This could be either in India or elsewhere, as circumstances and opportunity decides, and Government should provide at least partial financial assistance for this purpose.

B—CONTROL

The College was originally under the control of the Military Works Department and in 1855 was transferred to the Civil P. W D In 1896 control was transferred to the Education Department, where it remains at present

Admittedly my experience of the College is short, but I have consulted members of the staff, who have been here some years Their opinion, and my own, is that the

present control of the College is both unsuited to our needs, and considerably over centralized

It does not appear to be clearly laid down how much responsibility is delegated to various persons such as the Principal, the Director of Public Instruction, etc but it is obvious from records here that control has been gradually surrendered from below, with the result that comparatively simple matters, which should be dealt with by the Principal, are now referred to Government Decisions are only made after a long interval of time, and in some cases no reply is ever received, in spite of periodical reminders To take an example A small alteration in the Syllabus is put before the College Board of Studies Their recommendation is forwarded to the Director of Public Instruction, who eventually tells the Principal to bring it up before the next meeting of the Advisory Council, which probably meets 6 months later The recommendations of the Advisory Council are then forwarded through the usual channels to Government Before a final order is passed, a year will probably have elapsed since the proposal was originally made.

There are two points to be considered

(a) The controlling body

(b) The nature of the Control,

(a) *Controlling body*—It is not considered that the Education Department is suited to control a technical institution of this nature The requirements of an Engineering College are quite different from those of an ordinary Educational establishment, and the control should be exercised by persons who specialize in such matters It is considered that a reversion to the previous system of control by the Public Works Department would be of benefit to all concerned A proposal to this effect was put before the last meeting of the Advisory Council but they did not recommend it. I attach herewith relevant

extracts from the proposal which was submitted by Sir William Stampe I personally think the Buildings and Roads Branch are more suitable than the Irrigation Department, but that is a matter of detail, which can be settled, if once the principle is accepted Unless recent changes have been carried out both the Maclagan Engineering College Lahore and the Rasul School of Engineering are controlled by the Public Works Department Punjab Both these institutions have first class reputations throughout the whole of India

(b) *The Nature of Control*—Whatever controlling body may be decided on it is essential to decentralize to a large extent to ensure efficient working

I would suggest, therefore that matters of general policy and finance remain in the hands of the Controlling authority the Principal to have the normal financial powers of an officer of his standing e g Superintending Engineer

All matters pertaining to the academic side of the College e g Staff Syllabus etc should be dealt with by an *Executive Committee* empowered to make decisions which can be acted upon without further reference The Principal to be a member of this committee

All matters of internal discipline in the College are the responsibility of the Principal and he should have full powers to act in this connection on all occasions as he considers advisable Any action taken by him to uphold discipline must be given the full support of Government

C—STUDENTS

(1) Under the present system of entrance examination etc the College is not setting a high enough standard to ensure that only young men who are really capable are getting the benefit of the training afforded by the College In addition certain students coming to the College are obviously unsuitable physically or otherwise for the active and varied life of an engineer

It is proposed, therefore, that the entrance examination should be stiffened and the number of candidates chosen each year should be limited to 20 in the case of Civil Engineer class and 30 in the case of Overseer class In addition to this all candidates must successfully pass an interview or *viva voce* examination before being admitted to the College

It has been found in other countries that twenty is the maximum number that can efficiently be dealt with by a single instructor when teaching technical subjects which require personal tuition and supervision Also with the larger classes that we have at present—and the correspondingly lower average of intelligence—there are a certain number in each class who are unable to keep up with the others and are incapable of absorbing some of the subjects taught

(2) It is considered that the abolition of guaranteed posts for Civil Engineers and of paid apprenticeships for Overseers has had and will have an adverse effect on the type of student attracted to the College and on the results obtained by those in the College I am told by experienced members of the staff that since this incentive was removed the Civil Engineer class students have slackened off considerably and the majority are content with a pass, to be obtained with the minimum amount of energy Human nature being what it is young men of the student age require some incentive to make them produce their best and the restoration of these rewards would do much to raise general standard of the College

(3) A *smaller point but one that should not be neglected is* the corporate life of the College

At present there is a Common Mess for Civil Engineer class students the joining of which is voluntary and the numbers are gradually diminishing The life of an Engineer is such that he is required to work with and for his fellow men of

all castes and creeds, and there is no better foundation for this, than that of living in a Students' Common Mess

It is proposed that membership of the Mess be made compulsorily for all Civil Engineer class students

(4) It is suggested that the strength of the College University Training Corps be expanded from one platoon to a company

At present the authorized strength of the University Training Corps is 32, and this is sufficient for only one year of the Civil Engineer class With an increased strength, not only can more of the Civil Engineer class join, but there will be room also for a proportion of the Overseer Classes, who at present get no University Training Corps training

The benefits of some form of military training for young men, is now fully recognized by all responsible people

Discipline character and a spirit of co operation are developed which are invaluable to a prospective engineer to fit him for his future career

If this is approved in principle details can be worked out and it might be worth considering whether as technical men we might have a semi technical Pioneer Unit instead of ordinary Infantry

D —METHODS OF INSTRUCTION EQUIPMENT ETC

Most of the instruction given in this College is done by means of Lectures or Tutorial periods Descriptive lectures are given and young men are expected to absorb them, and to carry out designs etc of structures which in fact they have never seen and cannot visualise

One of the fundamental methods of training or instruction of any kind is through the eye

The College possesses a model room but most of the models and equipment are very out of date, whilst certain important things are non existent To give an example—Student s

taught Sanitary Engineering No models and apparatus exist, and it is not possible to teach Sanitary Engineering to a man, who has not even seen the elements of such an installation

The following are my proposals

(1) That sufficient money be granted to provide up to-date models, samples, etc and an adequate equipment of wall diagrams and plates for use in the Lecture Room

(2) That more money be provided for taking students to visit engineering works particularly large works in the process of construction India is a large country and distances are great It will not always be possible to find works in the vicinity, but a well planned tour, although perhaps involving extra expenditure will be of more value to students than many hours spent in the Lecture Room

(3) The laboratories of the Mechanical and Electrical Engineering Department require certain modern equipment to bring them up to-date and provide training in recent developments, e g refrigeration air conditioning, etc Since there is a separate proposal to expand the Mechanical and Electrical side of the College, this can be considered when the proposed expansion has been dealt with

Item (2)—' To consider whether the affiliation of the College with the Agra University is desirable and in the interests of the College "

The Thomason College was affiliated to the Calcutta University from 1864 to 1907, and to the Allahabad University from 1894 to 1905 In both cases the affiliation was entirely nominal No change was made in the College control and neither party had any dealings with one another

This question of affiliation to a University is one that recurs with monotonous regularity in the history of this College

In 1922 an independent Committee was formed to report on this question and in spite of the universal opposition of the people concerned they recommended affiliation of the College to Allahabad University. The proposal was approved by Government, but at the last moment the scheme was dropped.

I can think of no possible advantage to the College by affiliation to any University but many disadvantages. This is the universal opinion of both Staff and students.

There is a considerable amount of past correspondence on this subject in this office and the views of many persons are available.

If the proposer of this item will put forward any reasonable arguments in favour of affiliation I will discuss them with the Committee when they visit Roorkee.

Our recommendations for the future control of the College are given under Item (1).

Extract from a letter written by Sir William Stampe, late Chief Engineer, Development, Irrigation Branch, United Provinces, to M. R. Richardson, Esq., C.I.E., I.S.E., Chief Engineer and Secretary, Irrigation Branch, United Provinces.

THE THOMASON CIVIL ENGINEERING COLLEGE, ROORKEE.

As retiring President of the Advisory Council of the College I had a long discussion with Mr. Amoore recently in Roorkee. I had previously discussed matters with Mr. Weir, the Director of Public Instruction in Lucknow.

* * * *

Mr. Weir, Director of Public Instruction, told me that he thought the College could with advantage be transferred from the Education to the Irrigation Branch control. I personally would strongly recommend this. The Irrigation Branch take

the majority of the students and is therefore most interested in the administration of the College

In any event I would recommend that an early meeting of the Advisory Council be convened and all these matters be fully discussed and a strong note be submitted to Government

* * * *

Item (3)— To report whether any change in the existing medical arrangements at the College is called for

This question was brought up before the Advisory Council at their meeting held at Roorkee on Saturday July 16, 1938

A copy of their resolution together with a copy of Principal s note is attached

There is nothing further to be said on the subject

PRINCIPAL S NOTE ON ITEM 3

Prior to February 1933 the College had its own whole time medical officer a member of the I M D As a result of the 1931 College Retrenchment Committee s Report the post was abolished The College for medical attendance is now in visiting charge of the Assistant Surgeon of the Roorkee Civil Hospital who receives a remuneration of Rs 50 per mensem The Assistant Surgeon attends daily during the 1st term of each session for one hour from 7 30 to 8 30 a m and during the 2nd term and vacation from 7 a m to 8 a m

The College has its own hospital and dispensary and the average yearly expenditure on medicines and tools and plant during the past 5 years has been Rs 887

The Principal is inclined to think that the present medical arrangements are not satisfactory as those Assistant Surgeons who have been posted to Roorkee since the institution of the present system, have never given evidence of any interest in this work and have never won the confidence of the students

Their official residence is some 2 miles away and it is never easy to obtain their services, when required, outside their visiting hours The Principal suggests for consideration the appointment of either a pensioned Government medical officer or medical practitioner in private practice on a retaining fee of Rs 50 per mensem plus a rent free house on the estate

RECOMMENDATION OF ADVISORY COUNCIL ON ITEM (3)

The Council unanimously recommend that instead of the present system of placing the Assistant Surgeon of the Roorkee Civil Hospital in visiting charge of the College and paying him an allowance of Rs 50 per mensem that either a pensioned Government medical officer or a medical practitioner in private practice be appointed College Medical Officer on a retaining fee of Rs 50 per mensem on condition that such officer resides in a suitable College residence on the estate, which shall be rent free

Item (4)— To report on the feasibility of enlarging the scope of training imparted at the College with special reference to

(a) The inclusion of a course in architecture

(b) The inclusion of other branches of Engineering if any "

Before any time is spent on considering the enlargement of the scope of the College it is essential that the College be restored once more to a sound basis and to ensure that the primary purpose for which it is intended is provided for, i e to produce Civil Engineers and Overseers

A short note is attached on proposal (a) and two possible proposals under (b)

(a) *Course of Architecture*—This has previously been discussed and Director of Public Instruction's file no XVII 24(12) of 1937-38 contains certain information I

have no details of this former proposal here, and before giving any opinion or recommendation, it is necessary for the Committee to decide exactly what is required and what is meant by this proposal

It would be possible to train Architects in the College provided the necessary Staff is provided, but it is *not possibe* to train a man, who can practice *either as an Architect or a Civil Engineer.* Except for a few small points the two professions are entirely separate, and the training of either, except in the initial elementary stages, is widely different.

(*b*) (*i*) *Vocational Training*—A proposal was put up to the last meeting of the Advisory Council to undertake training in Engineering Trades at the College, but for various reasons decided that such a course was impracticable

(*b*) (*ii*) *Electrical and Mechanical Engineering*—Suggestions have been made for expanding the Electrical and Mechanical Engineering Departments of the College so as to produce properly qualified Electrical or Mechanical Engineers, who would receive diplomas, etc , in the same way as Civil Engineers.

Such a proposal is recommended and would be quite feasible If approved in principle details can be worked out. It will necessitate additional specialist staff and an expansion of the existing workshops.

Further proposals by Major C. D. Reed, R.E , Principal, Thomason College:

(1) *Control*

It is suggested that inquiries may be made with a view to the possibility of transferring the control of the College to the Central Government By this means it might be possible to reduce the cost of training of United Provinces candidates and to increase the efficiency of the College

The Government of India would be in a position to obtain a guaranteed number of students from Provinces which have not an Engineering College of their own as well as obtaining an efficient training for their own requirements

The following Provinces and Services could recruit from Roorkee

- Central Provinces
- Sind
- N W F Province
- Assam
- Bihar
- Indian States
- Army Department
- Government of India
- and possibly Burma and Ceylon

(2) *Staff*

To improve the efficiency of the Staff and to ensure up to date knowledge a proportion say one third could be recruited direct from the Public Works Department etc for short periods of about 3 years This wo[illegible] particularly useful in the case of the Irrigation Depart[illegible] ce engineers in this branch of engineering a[illegible] outside Government service in India

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